The EDISON ELECTRIC INSTITUTE BULLETIN

August 1957

R

C.2

vol. 25 no. 8

PUBLIC LIBRARY DETROIT

TECHNOLOGY DEPT.

Emerging Role of Public Relations
Edwin Vennard

The New 'Underground Systems Reference Book'
C. T. Sinclair

Housepower Program for Fall, '57

Annual Round Table Conference Plans
Edw. J. Brill

'Farm Better Electrically' Scores

Automatic Control of Generation on Va. Electric & Power System
Harrison Hubard

Published Monthly by Edison Electric Institute

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

(Includes Investor-Owned Companies, Cooperatives, and Government-Owned Utilities)

May, 1956-1957

SOURCE AND DISPOSAL OF ENERGY—MONTH OF MAY

	1957	1956	%
NET GENERATION* (Kwhrs in Thousands)			
By Fuel Burning Plants	39,899,660	37,385,059	+ 6.7
By Water Power Plants	11,799,742	11,700,887	+ 0.8
Total Generation	**51,699,402**	**49,085,946**	**+ 5.3**
Add—Net Imports Over International Boundaries	324,132	378,506	−14.4
Less—Company Use	144,057	123,832	+16.3
Less—Energy Used by Producer	1,229,039	1,182,288	+ 4.0
Net Energy for Distribution	**50,650,438**	**48,158,332**	**+ 5.2**
Lost and Unaccounted for	5,296,988	5,317,911	− 0.4
Sales to Ultimate Customers	**45,353,450**	**42,840,421**	**+ 5.9**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of May 31st			
Residential or Domestic	46,161,060	44,858,345	+ 2.9
Rural (Distinct Rural Rates)	1,630,288	1,668,390	− 2.3
Commercial or Industrial:			
Small Light and Power	6,156,252	6,084,086	+ 1.2
Large Light and Power	301,994	289,981	+ 4.1
Other Customers	178,780	171,064	+ 4.5
Total Ultimate Customers	**54,428,374**	**53,071,866**	**+ 2.6**
KILOWATTHOUR SALES—During Month of May (Kwhrs in Thousands)			
Residential or Domestic	11,309,923	10,361,036	+ 9.2
Rural (Distinct Rural Rates)	902,559	876,035	+ 3.0
Commercial or Industrial:			
Small Light and Power	7,440,432	6,784,537	+ 9.7
Large Light and Power	23,995,671	23,171,365	+ 3.6
Street and Highway Lighting	369,509	340,588	+ 8.5
Other Public Authorities	949,433	899,013	+ 5.6
Railways and Railroads:			
Street and Interurban Railways	182,923	194,204	− 5.8
Electrified Railroads	152,339	164,851	− 7.6
Interdepartmental	50,661	48,792	+ 3.8
Total to Ultimate Customers	**45,353,450**	**42,840,421**	**+ 5.9**
Revenue from Ultimate Customers (Thousands)	**$746,672**	**$696,515**	**+ 7.2**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended May 30, 1957			
Kilowatthours per Customer	3,047	2,858	+ 6.6
Average Annual Bill	$78.61	$74.88	+ 5.0
Revenue per Kilowatthour	2.58¢	2.62¢	− 1.5

* By courtesy of the Federal Power Commission.

THE EDISON ELECTRIC INSTITUTE BULLETIN is published monthly by the Edison Electric Institute, an association of electric light and power companies in the United States and its territorial possessions. Its affiliate members consist of members of the Canadian Electrical Association.

The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

•

Closing date for the BULLETIN is the tenth of the month preceding the month of issue.

Manuscripts and correspondence relating to the BULLETIN should be addressed to the Editor, Edison Electric Institute, 420 Lexington Avenue, New York 17, N. Y.

The Edison Electric Institute does not assume responsibility for, nor necessarily endorse or approve, statements made by contributors to the BULLETIN.

•

Subscription price of the BULLETIN is $2.00 per year in the United States; $3.00 per year in foreign countries.

Entered as second-class matter, August 17, 1933, at the post office at Philadelphia 2, Pa., under the act of March 3, 1879. Publication office, 56th and Chestnut Sts., Philadelphia 39, Pa. Editorial office, 420 Lexington Ave., New York 17, N. Y. Volume 25, No. 8, 1957.

The EDISON ELECTRIC INSTITUTE BULLETIN

August, 1957

Vol. 25 No. 8

Articles, Speeches, Reports

The Emerging Role of Public Relations
Edwin Vennard 259

New 'Underground Systems Reference Book'
C. T. Sinclair 263

Second Phase of HOUSEPOWER Program for 1957 Begins in September 265

Tenth Annual Round Table Conference to Stress Employee Effectiveness
Edw. J. Brill 269

'Farm Better Electrically' Scores in First Months as Program 271

Electronic Data Processing of Stockholder Records
Cortland G. Pohle and James J. Gannon 274

Automatic Control of Generation on the Virginia Electric and Power System
Harrison Hubard 277

Two More EEI Medals Are Presented for Heroic, Life-Saving Action 281

Accident Prevention Committee Meeting
R. W. White 283

News, Notes, Miscellany

Conventions and Meetings 253

1957 Rate Book Available 270

Unique Safety Record of Ralph Finnell 273

Mailers for Commercial Electric Cooking 283

Wisconsin Utility Accountants Meet 284

EEI Publications and Service Material 285

Personals 287

CONVENTIONS AND MEETINGS

1957

SEPTEMBER

5- 6 Northwest Electric Light & Power Association 50th Annual Meeting, Glacier Park Hotel, Glacier National Park, Mont.

9-13 Illuminating Engineering Society National Technical Conference, Biltmore Hotel, Atlanta, Ga.

11 PIP Steering Committee, New York City

11-13 EEI Industrial Power & Heating Group, Van Curler Hotel, Schenectady, N. Y.

18 ECAP Management Group Meeting, New York, N. Y.

13-14—Maryland Utilities Association 33rd Annual Fall Conference, Cavalier Hotel, Virginia Beach, Va.

19-20 EEI-AGA Accounting Division Organization Meeting, Leamington Hotel, Minneapolis, Minn.

19-21 PEA Structures and Hydraulic Committee, Highland Hotel, Massena, N. Y.

20-21 39th Annual Meeting, Public Utilities Association of the Virginias, Green-Brier Hotel, White Sulphur Springs, W. Va.

22-25 ASME 12th Annual Petroleum Mechanical Engineering Conference, Mayo Hotel, Tulsa, Okla.

23-24 Missouri Valley Electric Association Accounting Conference, President Hotel, Kansas City, Mo.

23-25 EEI Industrial Relations 10th Annual Round Table Conference, Drake Hotel, Chicago. Ill.

23-25 EEI Meter & Service Committee, Hotel Nicollet, Minneapolis, Minn.

23-25 ASME Fall Meeting, Statler Hotel, Hartford, Conn.

24-25 AIEE 6th Annual Industrial Electronics Symposium, co-sponsored with Institute of Radio Engineers, Morrison Hotel, Chicago, Ill.

25 ECAP Copy Group Meeting, Detroit, Mich.

25-27 PIP 1957 Workshop Conference, Whittier Hotel, Detroit, Mich.

30-Oct. 1 EEI Electrical System and Equipment Committee, Cosmopolitan Hotel, Denver, Colo.

OCTOBER

2- 3 PEA 50th Annual Meeting, Bellevue-Stratford Hotel, Philadelphia, Pa.

2- 4 Indiana Electric Association, French Lick-Sheraton Hotel, French Lick, Ind.

2- 4 Missouri Valley Electric Association Sales & Rural Conference and Home Service Workshop, Lassen Hotel, Wichita, Kan.

2- 5 22nd Annual Conference, International Association of Electrical Leagues, Sinton Hotel, Cincinnati, Ohio

7- 9 EEI Prime Movers Committee, Hotel New Yorker, New York City

1957

9-11 EEI Area Development Committee and 4th Annual Workshop, Phoenix Hotel, Lexington, Ky.

10-11 Southeastern Electric Exchange Accounting Conference, Fort Sumter Hotel, Charleston, S. C.

16-18 Wisconsin Utilities Association Annual Convention, Schroeder Hotel, Milwaukee, Wis.

17-18 EEI Insurance Committee, Dearborn Inn, Dearborn, Mich.

17-18 EEI Transmission and Distribution Committee, Statler Hotel, Boston, Mass.

17-18 PEA Relay Committee Meeting, Abraham Lincoln Hotel, Reading, Penn.

21-23 ASME Power Conference, Hotel Americus, Allentown, Pa.

21-25 National Safety Congress, Conrad Hilton Hotel, Chicago, Ill.

23-25 EEI-AGA Accounting Division Taxation Accounting Committee, Williamsburg Inn, Williamsburg, Va.

24-25 Oklahoma Utilities Association Electric Light & Power Division District Conferences—Oct. 24—Western Dist., Woodward, Okla. Oct. 25—Eastern Dist., Bartlesville, Okla.

28-30 NARUC Annual Convention, Peabody Hotel, Memphis, Tenn.

NOVEMBER

6- 8 EEI Accident Prevention Committee, Penn-Sheraton Hotel, Pittsburgh, Pa.

7- 8 Pacific Coast Electrical Association Hawaiian Conference, Reef Hotel, Honolulu, Hawaii

14-15 EEI Accounting Division Advisory and Executive Committees, The Cloisters, Sea Island, Ga.

18-21 AIEE Conference on Magnetism and Magnetic Materials, Sheraton Park Hotel, Washington, D. C.

19 PIP Inter-Regional Committee, (Noon to 5 p.m.) Mayflower Hotel, Washington, D. C

DECEMBER

1- 6 ASME Annual Meeting, Statler Hotel, New York, N. Y.

2- 4 EEI-AGA Accounting Division Electronics Seminar, Sheraton Cadillac Hotel, Detroit, Mich.

5- 6 EEI Industrial Relations Committee, Jointly with the New England Personnel Group, and probably the Employee Relations Committee of the Electric Council of New England, Sheraton Plaza Hotel, Boston, Mass.

9-10 EEI-AGA Accounting Division Depreciation Committee, Lord Baltimore Hotel, Baltimore, Md.

11 PIP Steering Committee, New York City

The EDISON ELECTRIC INSTITUTE
BULLETIN

The Emerging Role of Public Relations

By Edwin Vennard
Vice President and Managing Director, Edison Electric Institute

An address before the Utility Management Workshop, Columbia University, New York, N. Y., Aug. 8, 1957

IN the post-war years we have been hearing more and more about public relations in modern business. We have heard things both good and bad in connection with it, and we have heard almost as many definitions of the term as there are people working in the field.

We may say that public relations is essentially a process by which you as an individual or an organization try to make people like you. Every contact with people has a public relations effect, good or bad.

The principles of public relations come into play in everything having to do with people. With respect to employees, we are dealing with public relations in their selection, placement, training, pension and benefit plans, and the working conditions which we provide for them. With respect to the public, everything we do that affects the kind of service people receive or the price they pay for it or their opinion of the company has a public relations effect; our every contact with them makes a public relations impression of one sort or another. When we speak of a public relations program, what we are really talking about is adopting a way of doing business and conducting ourselves, our company, and its business, in a way calculated to make people like us and want to continue to do business with us.

The growing recognition of public relations as an essential part of the sales process is due in large measure to the fact that many of the techniques involved in public relations practices depend heavily on our modern methods of communication.

With the limited techniques and avenues of communication available before the turn of the century, little was done in the field. Although most corporations and industrial leaders did not by any means share Commodore Vanderbilt's attitude that "The public be damned," they were not overly concerned with the public's attitude toward business.

Businessmen, during our nation's period of industrial infancy, were generally too busy with other aspects of their businesses to concern themselves with the attitude of the public toward them. With few exceptions, they had no accurate means of knowing what that attitude was.

Shape of Public Relations

During the boom between the First World War and the crash of 1929, public relations, as a field of its own, began to take shape, but extensive programs were considered unnecessary since business was going so well. After the crash, industry came to a virtual standstill and further development of the art was correspondingly hampered. There was no real renaissance until late in the 'Thirties, and even this was eclipsed by the shadow of war.

During the Second World War, there was relatively little need for salesmanship, advertising, or public relations. The defense effort left the American productive system unable to supply the demand. Throughout the war it was a seller's market for most things. Furthermore, most Americans felt bound together in a common cause, with most of their mistrust and resentment directed toward the enemy. The war gave many firms a good excuse for poor public relations.

With the war over, however, and production returning to normal, with government spending being reduced at least temporarily, many industries realized that competition for the public's favor would soon be intense.

The American people had put up with five years of shortages and rationing. Many were antagonistic toward tradespeople and merchants who had grown careless and perhaps a bit arrogant during an era of short supply and intense demand. The people had put up with adverse conditions during these five years because the war had made them necessary, and because they knew things would eventually return to normal. Once normality returned, they were in no mood to be trifled with.

Fortunately, America's power companies were able to meet the greatly increased demand for power during the war years without cutting or rationing electric service. On occasion, some things such as minor repairs or rewiring had to be postponed, and appliances had been next to impossible to buy. But electricity had been virtually the only important commodity or service that was not rationed. The public had been spared hearing the odious phrase, "Don't you know there's a war on?" as an excuse for inferior service from the nation's power companies.

We had succeeded in coming through the war with an enviable record of achievement and a negligible loss of the public's good will. Thus the power companies were in an excellent position to pursue an effective

campaign to continue and increase that feeling of good will.

Our industry has a special stake in good public relations. As public utilities, we are often described as being "vested with a public interest." The service we render is so essential to modern living that we are required by law to furnish adequate service to all who request it within our service areas, and to furnish it without discrimination. We have almost the entire public as customers. Thus we are dependent to a unique degree upon favorable public opinion.

Public Relations Defined

Public Relations News has defined public relations as "the management function which evaluates public attitudes, identifies the policies and procedures of an individual or an organization with the public interest, and executes a program of action to earn public understanding and acceptance."

Note that this definition makes the point that public relations is a management function. This is a most important point, and it is precisely in this respect that many organizations fail in their administration of a public relations program.

It cannot be overemphasized that the key to good public relations lies in the hands of the chief executive. There is no way of getting around the fact that the success of even the best public relations program is largely dependent on the attitude of management, and specifically dependent on the understanding and attitude of the president.

His policies and approach to public service inevitably will be reflected by the members of his organization, not only in their contacts with customers, but with each other as well, thereby affecting the entire character of the utility. Administrative competence, engineering excellence, sound sales planning, and other attainments of importance may go completely unappreciated both by the public and the employees themselves, if there is any appearance of indifference at the top level.

Some companies have experimented with having various departments handle their own public relations. With few exceptions, this has proven to be unworkable and ineffective. The lack of uniformity and poor coordination that results from this sort of set-up is undesirable under almost any circumstances. The benefits that result from having one person in charge of public relations activities far outweigh any advantages to be found in a diversified operation.

Any and all contacts or relationships a company has with people—customers, employees or stockholders—are part of the fabric of public relations. Public relations considerations appear in practically every area of utility operations. Extending like the roots and branches of a tree, they are varied and sometimes not immediately apparent, but they all deserve the attention of management and public relations executives.

One of the chief barriers to an effective and all-encompassing public relations program is the tendency on the part of company personnel to concern themselves only with the immediate and superficial aspects of their primary job.

A meter-reader who thinks his sole job is to read meters, to the exclusion of the many other means of serving the company's customers and gaining their good will, shows a misunderstanding of the utility's basic service function and urgently needs correction. Here is a situation where "if the pupil hasn't learned, the teacher hasn't taught." Tact, ingenuity, skill, and perseverance are required to make everyone in the company broaden his outlook so that the forest, not just his particular tree, can be seen. When that is accomplished, a sense of corporate unity of purpose and cooperative action will be achieved, together with awareness of the public relations importance of individual actions.

An 'Open Book'

As public utilities, our record should be and is an open book to anyone who cares to inquire. It is to our advantage, as well, for the public to know the facts about our business. The more that is known about us by the American people, the less misunderstanding will result, the more customer good-will we will have.

We need effective public relations as a means of correcting misunderstandings about our business. For example, it has been repeated time and again by the opponents of business managed utilities that we are monopolies. These opponents have rarely bothered to define the term "monopoly." They have achieved some success in their constant use of the term when referring to investor-owned companies because the word has an undesirable connotation. People assume that "monopolies," as the term is used, are businesses that have no competition or control and can therefore do just about as they like.

Those who are aware of the facts know that this is not the case in the power business. Because we are constantly competing with each other, with suppliers of other forms of energy, with other businesses for the customer's dollar, with organizations large enough to generate their own electricity and with the government itself, it cannot be said that America's 400 investor-owned companies are monopolies. Because we are regulated and because we must obtain and continually renew franchises in order to operate, we are extremely dependent on public opinion.

Let the Public Know

A public that is dissatisfied for whatever reason, real or imaginary, can put any power company out of business. It is not enough merely to do a fine job of serving the public. We must make sure the public knows it and appreciates it. It is folly to do a job half-way; yet that is exactly what is being done in cases where our customers fail to realize they are getting the kind and the quality of service they receive from our industry.

From yet another point of view, public relations is becoming of increasing significance to the future well-being of our industry. There can be no more important or necessary part of the sales picture than price; that is an elementary principle which has been recognized by economists since men first began selling things to each other.

We discovered many years ago that it was not enough to make the price of our product low. In addition, our customers must know that it is low and that it is fair; and that is quite another matter.

It is a fact that effective selling is inseparable from public relations. Unless an atmosphere favorable to the sale exists in the mind of the customer, the potential sale becomes difficult, if not entirely impossible. If more people knew more about our business and the economic principles affecting it, the task of our sales forces would be easier.

Sometimes our rates are compared with subsidized government power rates with the implication that our price is "high" or that we are not operating as efficiently as men in government. People should know that so-called "public-power" is not cheap power, but that large portions of cost are absorbed by government subsidy. Considering the nation's electric customers as a group, they pay no less for government power than for power generated by America's tax-paying power companies. It is only a bookkeeping shuffle that makes it appear so.

A realization of this fact is a basic part of creating a climate of understanding which will enable our companies to continue to sell power as we have in the past. Let us not toss this effort off as some kind of frill which we do not need; it is an integral part of the sales process.

Beyond that, it is beginning to appear to be necessary to the survival of the industry itself that we put the facts before the people. As Alfred Cooper wrote in *Public Utilities Fortnightly:*

> "If the business managed utilities muff the opportunity to sell the public on the advantage of private ownership, it is almost a certainty that within 20 years every electric utility in America will be publicly owned."

Perhaps he has exaggerated a bit, but when we consider the trend since 1932 his prediction doesn't seem impossible. For example, TVA has grown until it has become the largest single producer of electric power in the United States. It was begun as a navigation and flood control project. Now, about 75 per cent of the power produced by TVA is from steam generators.

Surveys made over the years have shown that the American public is generally opposed to socialism; the majority of the public favors business ownership of the power companies.

Why, in the face of public opinion, have government ownership advocates been so successful in pushing through their collectivist projects? A large part of the answer lies in a statement of Joe Bevis of Opinion Research Corp.:

> "I think even its staunchest critics will agree that the TVA propaganda machine is one of the best that has ever been devised. This high development of the art of propaganda seems to be a characteristic of many of the agencies that are supported by the taxpayer. And business leadership's weakness in this respect is undoubtedly one of the reasons why we still have a government in Washington that is out of step with the thinking of the business community."

America was sold on flood control and improved navigation and got a gigantic government power-plant—TVA. It was sold on inexpensive rural electrification and wound up with more subsidized government power plants. It may be sold on so-called "cheap power for everyone," and end up with out-and-out socialism.

We have a big job to do. What must be done is obvious; we need to convince the American public that power companies have done, are doing, and will continue to do a fine job of supplying power to the American people at fair and reasonable rates, all the while paying their own way tax-wise.

Ignorance Breeds Mistrust

There is a truism to the effect that "people fear that which they do not understand." Much of the mistrust and bad feeling on any issue is due to a lack of knowledge of facts. For example, when electricity first began to be used in homes and offices, wild rumors and groundless fears were almost universal.

Even today power companies get calls from people such as the woman who had a loose connection and was afraid the "juice" would leak out on the floor and perhaps ruin her rug.

In 1885, Mayor Carter Harrison of Chicago said, "As the father of over 600,000 people, all looking to me for protection, I say we want electricity, but we do not want death dashing like a horrid monster through our streets. We ask you to devise means by which you can carry your monster beneath the surface of the earth, where it will not destroy."

It is very important to make sure your customers know who and what you are; what you're doing and how you're doing it. They have a right to know what's going on, and it's good business to let them know. For example, public opinion surveys have shown that most people have a greatly exaggerated idea about the amount of profits most companies make. Most people believe that the average company makes a profit of about 21 per cent on the sale of its goods or services. They think this is much too high. Most of them feel 10 per cent would be about right for the average company, and when they are told that the average of corporate profits is about 4 per cent, much of their ill will disappears.

It is generally true that those organizations that have succeeded in gaining the public's good will are the most successful in their field. Their success in gaining and holding the public's confidence was not due to luck, and was no accident. A well-thought-out and competently executed public relations program invariably forms the basis for general public acceptance and good will.

There are a few simple steps which have proven successful in setting up a comprehensive, effective public relations program.

The first step is to establish objectives; decide exactly what you want to accomplish by your efforts. These objectives should be realistic and attainable. Consideration should be given to long-term and intermediate goals, as well as short-term. Of fundamental importance is stating each goal in terms of its benefit to the public. Each goal should be one that the public will approve.

After establishing your goals, examine your present position with respect to policies and practices. Determine whether or not they are in line with the goals you have set up. Then, insofar as you are able, discontinue practices not goal-directed and emphasize those that are.

In this field you have to know where you stand at present in the public's opinion in order to determine how successfully your program is working in the future. Therefore, your third step will be to take employee and public opinion surveys. From these, you will learn what the public likes and dislikes about you and you'll discover how well informed or misinformed they are about your operations.

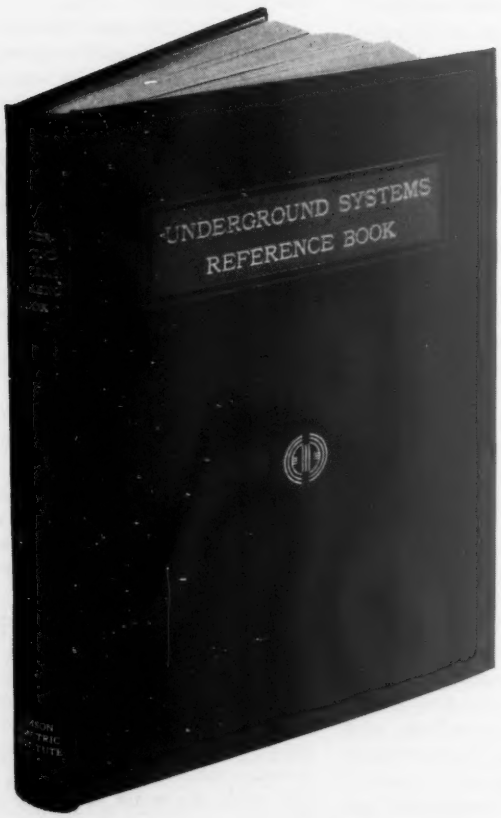
It is difficult to design and conduct the surveys yourself. A reputable organization specializing in this work can do the job more efficiently, and in addition, their results are likely to be more accurate.

Remember that 99 people out of 100 are usually flattered to be asked

(*Continued on page* 288)

Just Off the Press!—EEI's Completely Rewritten and Enlarged

Underground Systems Reference Book



★ First new edition in 26 years

★ Complete treatise on design, construction and operation of power cable systems

★ Prepared by 134 of the electric industry's leading engineering authorities on underground systems

★ For both field and office use

★ 624 pages

★ More than 900 illustrations

★ More than 150 useful tables

★ Comprehensive index for quick and easy reference

★ Overall size—8⅞ x 11⅝ inches

★ Durable Fabrikoid binding, reinforced for rugged use

PRICE PER COPY

No. of Copies	Members	Non-members
1-9	$11.50*	$12.50*
10-49	10.00**	11.50**
50-99	9.00**	10.75**
100 or more	8.00**	10.00**

Reduced prices for quantities apply only to one order in one shipment to one address and are not cumulative.

* Postage prepaid in USA on 1-9 copies.
** FOB, Clinton, Mass.

Approximate shipping weight—4¼ pounds per copy.

If your regular purchase order form is used, please give shipping instructions.

Check or money order should accompany all orders from individuals.

Prices to foreign countries slightly higher. Write for descriptive folder and price information.

Address orders to:

Edison Electric Institute

420 Lexington Ave. • New York 17, N. Y.

New 'Underground Systems Reference Book'

By C. T. Sinclair*

AS the editor-in-chief of the first *Underground Systems Reference Book,* published 26 years ago, it is a particular pleasure to comment on the new edition which was published by the Edison Electric Institute on August 1.

The original *Underground Systems Reference Book,* issued in 1931 under the auspices of the Underground Systems Committee of the NELA, has long been out of print. Moreover, the changes in underground practices with the development of new equipment and techniques have been so notable since its publication in 1931 that it can no longer be classified as a modern reference book.

*Mr. Sinclair is vice president of the Peter F. Loftus Corp.

The Underground Systems Reference Book contains 624 pages and measures 8⅞" x 11⅝" overall. It is printed with a three-column format and has a durable, stiff - dark - grey cloth - covered binding. Price $12.50 per copy. Quantity prices upon application to the Edison Electric Institute, 420 Lexington Avenue, New York 17, N. Y.

A revision of the earlier work, primarily to cover these new developments, was on the agenda of the Transmission and Distribution Committee of the EEI for several years but was delayed by the volume and pressure of other work. The decision to proceed with the task was finally made in 1953 and work started with the assembly of a group of well-known engineers eminently qualified in various fields to serve as the editorial staff. It soon became apparent that the new book would be considerably more than merely a revision of the old. In fact, it is a completely new work and retains only a small portion of the information in the original book which was considered of historical interest.

As has been the intent with other volumes of the series of technical reference books published by EEI and its predecessor, the NELA, the *Underground Systems Reference*

Looking over the recently published *Underground Systems Reference Book* are, seated from left: James A. Pulsford, Editor-in-Chief and J. W. McAfee, EEI Vice President. Standing are from left: W. M. Penney, Chairman of the EEI Transmission and Distribution Committee; Edwin Vennard, EEI Vice President and Managing Director; and Donald S. Kennedy, EEI President.

Book has been prepared with a view to its practical usefulness both in the office and in the field. The members of the editorial staff were selected from among practicing engineers closely involved with the techniques which they were chosen to describe. The staff included 134 members from all sections of the country. It included representatives from all the utilities operating extensive underground systems and representatives from manufacturers supplying equipment for such systems. The book reflects the consensus of the engineers responsible for the design and operation of underground distribution systems, concerning the most approved practices employed at the present.

Editor-in-Chief

James A. Pulsford, who was Chairman of the Transmission and Distribution Committee of the Edison Electric Institute, was chosen to be Editor-in-Chief. Mr. Pulsford has spent 34 years in electric power engineering, specializing for 30 years in the underground field. He is now Assistant Transmission and Distribution Engineer for the Public Service Electric and Gas Co. He served as underground sponsor for the Transmission and Distribution Committee of the Edison Electric Institute from 1947 to 1950, and was its Chairman from 1951 to 1953. He has also served on many other committees of national scope in the underground field.

Veteran Associate

Carlos C. Knox, who had been intimately associated with the preparation of the NELA *Underground Systems Reference Book*, was chosen to be Associate Editor-in-Chief. Mr. Knox has been closely connected with the development of modern cable systems over the past 35 years. He is now a Consulting Engineer with the Peter F. Loftus Corp., having previously served in various engineering capacities with The Cleveland Electric Illuminating Co., the Duquesne Light Co., and the Shanghai Power Co. He has also served as consultant on power for the Economic Cooperation Administration in Korea and as Secretary of the NELA Underground Systems Committee.

It is obviously impracticable to give similar biographical sketches of the entire staff. Suffice it to say the reference book reflects the background, education, and experience of its staff by the completeness and authenticity of its contents. As a result of questionnaires and the wide geographical distribution of authors, no chapter reflects the practices of one locality only. The education and experience of key staff members when summarized is most impressive. Eighteen of the 19 key members of the staff have engineering degrees, including four from MIT, two from Lehigh, two from Cornell and one each from California Institute of Technology, Harvard University, Johns Hopkins University, University of Minnesota, Penn State College, University of Texas, University of Toronto, University of Virginia, and Washington State College. These men have an aggregate of 749 years of experience in engineering work for power utilities or in the manufacturing of cable primarily for the power utilities.

Five of the book's staff are Fellows of AIEE.

All have published numerous technical papers in the specialized field which they cover in the book and in many cases in many other fields. All of them hold positions of engineering responsibility in their companies and are widely known and respected for their engineering ability in the entire industry.

A similar tabulation for the remainder of the staff would be equally impressive but would perhaps be boring to the reader. Suffice it to say that all of the associate and assistant editors have experience, education, and reputation that eminently qualify them for their splendid accomplishments.

Chapter Divisions

The book has been divided into chapters dealing with the principal divisions of the subject. The first nine chapters are primarily concerned with design features and the last six with operation.

The Introduction covers the historical development of underground distribution systems and includes a resume of modern practices and indicated trends in the development of conductors, insulating materials, and protective coverings.

Chapter 1 is an introductory chapter covering factors governing the adoption of underground distribution as an alternative to overhead, and the types of systems in common use.

Chapter 2 is a detailed discussion of underground cables containing data on the characteristics of copper and aluminum conductors, insulating materials, and protective coverings. Additional sections cover design and manufacture of cable and a resume of various design specifications.

These Systems Covered

Chapter 3 covers bulk power systems with special emphasis on the design and operation of pipe-type cable systems, and low-pressure oil-filled and medium-pressure gas-filled cables in ducts.

Chapters 4, 5 and 6 cover details of design and operation of conventional radial and loop systems, network systems, and street lighting systems, respectively.

Chapter 7 discusses the layout and design of conduit and manholes.

Chapter 8 discusses cable installation practices, including the installation of aerial cable.

Chapter 9 describes the theoretical and practical aspects of the design and installation of cable joints and terminations. A section of this chapter covers the selection and training of cable splicers.

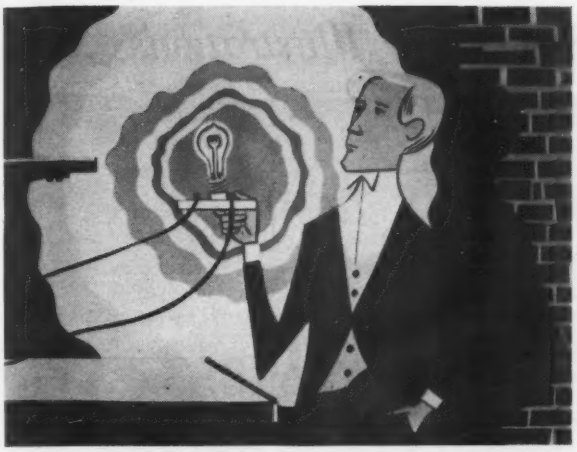
Concerning Operation

Chapter 10 deals with the problems of cable and equipment loading, including transformers, network protectors and buses. This chapter comprises the most complete survey of the literature on the subject which has been compiled to date.

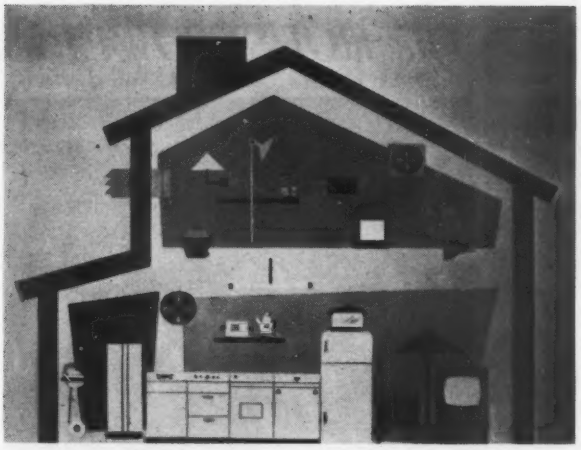
Chapters 11 through 15 deal with special operating problems in cable testing and the location of faults in Chapter 11, a discussion of maintenance procedures and record systems suitable for recording underground system data in Chapter 12, the reconditioning of equipment with a discussion of duct splices in Chapter 13, the problems of corrosion and its mitigation in Chapter 14, and safety practices in Chapter 15.

The subject of each chapter has been exhaustively treated, but in a manner suitable for ready reference. Discussions of a highly technical nature, such as appear in the chapter on cable loading, have been amply supported by references to the original articles from which

(*Continued on page* 284)



Thomas A. Edison in 1879 invented the first practical light bulb. This is one of the illustrations in EEI's slide presentation, "The HOUSEPOWER Story," available for the Fall 1957 HOUSEPOWER program.



For full HOUSEPOWER today to accommodate as many as 30 appliances, a 10 to 12-circuit panel and 100-amp service entrance are recommended. Other slides from "The HOUSEPOWER Story" are on the next page.

Second Phase of HOUSEPOWER Program for 1957 Begins in September

THE Fall 1957 HOUSEPOWER program which is designed to pre-sell customers and to provide leads for contractors will be launched early in September under the theme "Live Better . . . Electrically with Full HOUSEPOWER."

E. O. George, chairman of the EEI Wiring Promotion Committee and vice president of The Detroit Edison Co., said this second phase of the 1957 program will include materials developed and used for the first phase of the program, in addition to numerous aids to be available for the first time during the last four months of the year.

The overall objectives of the HOUSEPOWER program are to create wider consumer identification and to supply greater selling leads for the selling team—contractor, dealer, and utility sales personnel—through new merchandising aids, a coordinated national advertising program and a training course on selling strategy. Additionally, the program aims to inform the consumer of the HOUSEPOWER concept and to integrate the activities completely with those of other industries. These objectives are part of the long-range goal to modernize the wiring in 20,000,000 homes by 1966. HOUSEPOWER, announced last year, was conceived as a 10-year program.

Among the new aids available is a picture slide presentation, "The HOUSEPOWER Story," developed by EEI and adaptable for local presentation. A series of 39 color slides and script tell the story of HOUSEPOWER in simple terms. It can be augmented with slides of a local nature describing local financing plans or other points of particular interest to each situation. The cartoon-type illustrations vividly point up the advantages of full HOUSEPOWER through such contrasting scenes as poorly-lighted and adequately-lighted homes.

Then and Now

From the first practical electric light bulb invented 78 years ago, the presentation includes illustrations of the average American home today which usually is equipped with a minimum of eight electrical appliances and often as many as 30. "The HOUSEPOWER Story" although primarily aimed at women's groups is suitable for industry and allied personnel meetings of both men and women.

Publication of a HOUSEPOWER-"Live Better . . . Electrically"—sponsored supplement to *Publishers Auxiliary*, trade paper for editors of daily and weekly newspapers, will coincide with National Home Week, Sept. 21-29. The six-page supplement featuring editorial material and ads will explain the HOUSEPOWER story and the benefits and other aspects of HOUSEPOWER which are of interest to the homeowner. Articles also will be devoted to the different phases of electrical living and development.

The editorial copy, which is free for newspaper use, can form the nucleus of an electrical section in the local newspapers. The promotion is important to editors because of the editorial interest to their readers and because of the extra advertising it will provide. Suggested HOUSEPOWER ads will occupy part of the section. Glossy photographs of advertising elements will be made available to newspapers requesting them.

The supplement's format is as follows: Page 1, explanatory copy; Page 2, ideas for home improvement through electricity; Pages 3 and 4, articles directly concerned with the

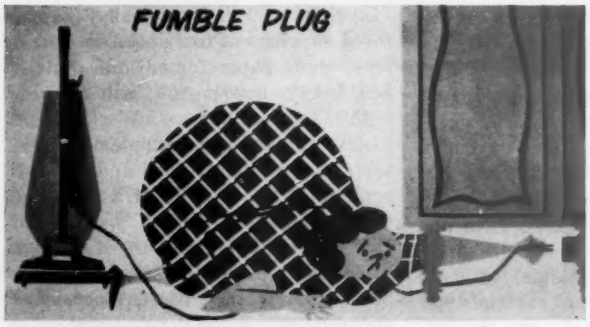
The HOUSEPOWER Story on Slide Illustrations

"Blackout Lighting" in the kitchen means squinting over tasks, as shown by this woman trying to remove pin feathers from fowl.

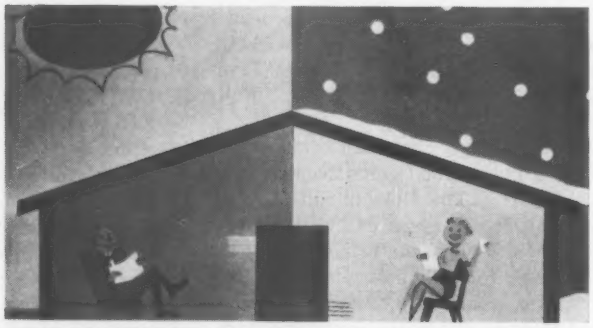
In contrast is the modern, well-lighted kitchen where even light makes kitchen work less of a chore if not a real pleasure for the homemaker.

"Blind Flying" is aptly named as witnessed by this woman who stumbled on a toy on the dimly lighted stairway.

With proper stairway lighting, as illustrated in this slide, there is no chance of overlooking objects on the stairway.

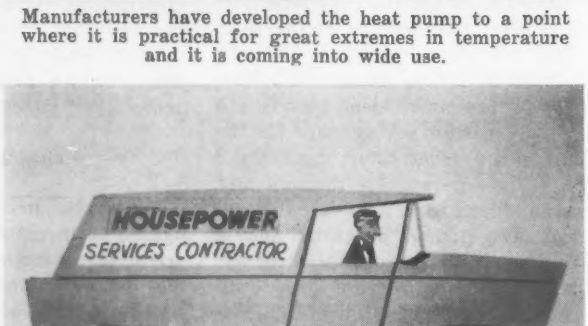


"Fumble Plug" shown above means exactly what it says—plugs under the furniture, in hard-to-reach places. Often plug location hinders furniture arrangement.



Manufacturers have developed the heat pump to a point where it is practical for great extremes in temperature and it is coming into wide use.

In addition to lighting, most homes have a minimum of eight electrical appliances—radio, refrigerator, iron, clock, washer, television, toaster and vacuum cleaner.



Experienced electrical contractors will install the additional wiring needed to bring full HOUSEPOWER into the home. He will help the homemaker with her problems.

HOUSEPOWER story as well as stories and ads showing how HOUSEPOWER tie-ins can be accomplished effectively by all who participate in the special section; Pages 5 and 6, LBE stories.

Utilities are urged to encourage manufacturers, their distributors and dealers to tie-in with the *Publishers Auxiliary* promotion in local areas.

Westinghouse Electric Corp. is producing a sound motion picture in support of the Fall HOUSEPOWER program and it will be available to utilities at print cost. The 27-minute film is to be of an educational and entertaining nature for consumer use.

Among the continuing elements of the program are cartoon-type ads to be published in September, October and November in *Better Homes and Gardens* and in *Saturday Evening Post*. Created by some of the nation's best known cartoonists, these ads have attracted considerable attention by satirizing the discomforts of insufficient HOUSEPOWER.

HOUSEPOWER Forum Continues

Another continuing activity is the HOUSEPOWER Forum for electric companies, contractors, distributors and electrical leagues developed by EEI in cooperation with the National Electrical Contractors Association. Mr. George suggests this forum be repeatedly continued if the industry is to accomplish its primary mission of rewiring 20,000,000 homes by 1966. In kit form and offering the latest sales approaches and techniques, the Forum may be sponsored as six two-hour meetings or as three three-hour meetings.

The Forum, designed to aid the contractor or others who make wiring recommendations and proposals, includes a planning guide to make the course as effective as possible; conference leader's manual which gives instructions on conducting meetings—how to use materials and how to stimulate enthusiasm; audio-visual materials—including two sound-slide films and a silent slide-film concerning HOUSEPOWER; booklets which give contractors a complete sales manual on profitable selling of residential wiring when the course is finished; and HOUSEPOWER visual sales presentation which the contractor may use in discussing HOUSEPOWER with prospective customers.

The six lessons in the Forum cover: "The Market & Your Basic Selling Strategy"; "How to Make Your Prospects Want Full Housepower"; "Faster Selling Through Selling Tools"; "How to Overcome Objections and Stalls"; "Getting the Job Done at a Profit"; and "How to Get All the Customers You Want."

Sales training for contractors is essential and the Forum is probably the most important element of the 1957 program, according to Mr. George. As new contractor personnel enter the scene, they will require training, therefore the Forum's period of usefulness will be in direct ratio to the duration of HOUSEPOWER activity, Mr. George said.

Some suggestions for developing interest in the HOUSEPOWER Forum in local areas are:

1. Through distributors. Enlist the help of local wiring supply distributors in lining up contractors who are likely prospects for the Forum.

2. Selling contractors on being more effective salesmen. Make a mailing to your residential contractors, pointing out the opportunities for more business and higher profits as a result of the Forum.

3. Use case histories to promote the Forum. If you have conducted a Forum in your area, solicit and tabulate reactions and specific results from contractors who have completed the course. These case histories make good selling material for future courses and

Identification of HOUSEPOWER Doubles in Six Months, Study Indicates

IDENTIFICATION of the HOUSEPOWER theme by residential occupants nearly doubled between June, 1956 and December, 1956, according to the second survey on penetration of the theme conducted for EEI by Fuller & Smith & Ross, advertising firm.

In the June study, after HOUSEPOWER had been promoted for only a short time, a recognition of 19.9 per cent was noted. The second study revealed that 38.9 per cent of those questioned could adequately define the HOUSEPOWER theme.

The recognition value of four advertising themes promoted for several years was compared to consumer identification of the HOUSEPOWER theme in both surveys. The table below summarizes the comparative progress made over the six-month period by all themes checked.

Theme	*Length of Time Promoted*	*First Study*	*Second Study*
HOUSEPOWER	May, 1956	19.9%	38.9%
TCP	Jan., 1953	28.6	35.4
Halolight	1948	23.4	29.0
Fluoristan	Dec., 1955	25.2	29.9
Dynaflow	June, 1947	52.3	55.9

In the first study 20 per cent of home owners and 16.5 per cent of non-owners questioned correctly identified HOUSEPOWER, while in the next study 40.1 per cent of home owners and 36.5 per cent of non-owners could identify the theme.

Television was mentioned most often in both surveys as the source of HOUSEPOWER identification—by 27.2 per cent in the first poll and by 68.5 per cent in the second. Newspapers and magazine ads rated second and third.

EEI-sponsored HOUSEPOWER ads in *Saturday Evening Post* have rated consistently in the top third of all one-page (color and black and white) ads among women readers, a Starch report revealed. The second in a series of HOUSEPOWER cartoon-type ads which was featured in the *Saturday Evening Post* on March 16, 1957 ranked seventh among "Most read" of 84 full-page ads in the issue. This ad highlighted four cartoons—by Chas. Addams, Claude, Steig and Taylor—pointing up the dilemma of low HOUSEPOWER.

are of interest to other utilities as exchange information

4. NAED kit tells HOUSEPOWER story. The National Association of Electrical Distributors has alerted its members to the HOUSEPOWER program and its benefits to the electrical contractor. NAED has released a kit of materials telling the local distributor how to sell contractors—and help them sell—HOUSEPOWER.

Rating Sheet Used

The National Adequate Wiring Bureau's HOUSEPOWER Rating Sheet, also being continued this Fall, serves a dual purpose. The HOUSEPOWER Rating "offer," after bringing contractor and customer together, permits the contractor to show the customer what the existing wiring provides for and after selling the value of full HOUSEPOWER, the contractor is able to show what additional wiring will provide for. This Rating Sheet will be used along with the HOUSEPOWER Visual Presentation which gives the contractor a complete sales "pitch" for the customer and the HOUSEPOWER Estimate-Proposal Form, a "sales-closer" which helps the contractor price the job and sign the customer.

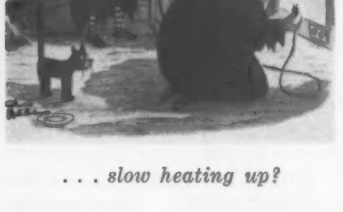
A series of regional and local workshops will be presented from September through October to provide opportunity for discussion of next year's program and to afford adequate time for individual utilities to be included in the 1958 planning.

Newspaper advertisements are suggested to tie in the local area with the national promotion. The EEI HOUSEPOWER Idea Book for Fall 1957 includes samples of "Live Better . . . Electrically"-HOUSEPOWER ads suitable for insertion in local newspapers over the local utility's signature or for use by trade allies. Four other ads are available in addition to the three in the kit. The kit contains also newspaper releases which can be used as fillers.

For the Fall, 1957 campaign the HOUSEPOWER Program has adopted a new key medium to carry its adequate wiring message to the public. The Wiring Promotion Committee has determined, as have many national advertisers, that nation-wide network radio has made a tremendous comeback in popularity and sales ability.

The "new" radio has a completely different format from the pre-television radio. It is geared to the latest modes of outdoor living and close family life. This medium enables the individual to be entertained and at the same time enjoy his favorite hobby. Research studies indicate that more people listen to radio than watch television.

. . . slow heating up?



Lights dim when appliances start?

Cartoon ads of this type, used in the HOUSEPOWER advertising program earlier this year, will be continued in the 1957 Fall program.

One of the most attractive features of the HOUSEPOWER radio plan is the opportunity it affords to electrical contractors, electrical leagues and local wiring bureaus—as well as to utility companies—to identify themselves with national radio advertising at exceptionally low cost.

The tentative program for radio will include an initial half-hour program saluting HOUSEPOWER, and will be followed by commercials on the NBC week-end program *Monitor* to achieve maximum impact with a series of five-minute spots. These five-minute spots will be spaced to enable a local sponsor to purchase time immediately adjacent for a local tie-in.

The radio campaign will be used to augment the balance of the Fall program.

1958 Plans

The 1958 HOUSEPOWER plans are to continue the use of radio, *Saturday Evening Post* and *Better Homes & Gardens*, and will add *Sunset*—a West Coast magazine which will provide additional impact and reliability in that region.

Spring plans for 1958 are to be highlighted by a $100,000.00 consumer contest, featuring a "name-the-caption" cartoon drawn by a name cartoonist. First prize will be $10,000.00 in cash, with smaller secondary cash prizes and additional awards of electrical appliances and adequate wiring jobs. The tremendous success of the 1956 contest indicates that this form of promotion facilitates local utility tie-ins and enhances consumer readership and participation.

Booklet to Sell Program

The second phase of the 1958 HOUSEPOWER program concentrates its activity beginning about Sept. 1, 1958, and is built around a "chain-reaction" booklet offer. A special, service-type booklet will be developed to sell the homeowner on the advantages of life with full HOUSEPOWER. The booklet will be offered for a nominal charge in *Saturday Evening Post, Better Homes & Gardens, Sunset* and on radio. The consumer will fill in a coupon or write a letter requesting the booklet, and mail it to a central address. The handling agency on receipt will channel these names to the specific utility in area of the reader. At the same time, the agency will mail the booklet to the customer. Enclosed in the booklet will be a return postcard addressed to the local utility and including a request for a HOUSEPOWER Rating.

This chain reaction will supply sales leads to the utility in the form of readers' names from the receiving agency, and in many cases, specific requests for Ratings in the form of returned postcards.

Tenth Annual Round Table Conference to Stress Employee Effectiveness

By Edw. J. Brill

Chairman, EEI Industrial Relations Committee

ENLARGING Employee Effectiveness" is the theme of the Tenth Annual Round Table Conference of the EEI Industrial Relations Committee to be held at Chicago's Drake Hotel Sept. 23-25. Talks and round table discussions will deal with the problem of making the work force—as a whole—and the employee—as an individual—more effective for themselves and to the company.

An invitation to attend the three-day conference is extended to all management people of business-managed electric light and power companies whether they are from industrial relations, operating or other administrative fields. The growing attendance at these annual Round Table Conferences is evidence of the value of this annual meeting where all segments of management get together in general meetings and small discussion groups to learn what others are doing to resolve problems associated with the theme of the conference.

Three leading electric utility executives will speak to the group at luncheon meetings. J. W. McAfee, President, Union Electric Co., and Vice President, EEI, on Monday, Sept. 23, will talk on "Creative Communications." W. O. Turner, President, Louisiana Power and Light Co., on Tuesday, Sept. 24, will have as the title of his speech "Toward Effective Supervision." On the closing day, Wednesday, Sept. 25, Edwin Vennard, Vice President and Managing Director, EEI, will speak on "Increasing the Industry's Effectiveness."

The four discussion topics will be discussed by four keynote speakers at a general meeting to be held on the first morning of the Conference. Their talks will highlight the broad areas to be explored in detail later at group sessions.

Frank J. Gleeson, Director of Personnel, Northern States Power Co., will open the general session with

Speakers and Conference Leaders

Luncheons

J. W. McAfee, *Vice President*—Edison Electric Institute and President, Union Electric Co.

W. O. Turner, *President*—Louisiana Power and Light Co.

Edwin Vennard, *Vice President*—Edison Electric Institute

Keynote Speakers

F. J. Gleeson, *Director of Personnel*—Northern States Power Co.

D. A. Bartlett, *Director of Industrial Relations* — Western Massachusetts Electric Co.

G. W. Fewkes, *Manager Personnel Dept.*—Philadelphia Electric Co.

C. H. Campbell, *Personnel Director*——Pacific Power and Light Co.

Conference Leaders

Utilizing the Work Force

D. C. Allen, *Industrial Relations Manager* — Public Service Electric and Gas Co.

H. L. Durgin, *Executive Vice President*—Central Vermont Public Service Corp.

J. J. Ehlinger, *Personnel Manager, Eastern Division* — Niagara Mohawk Power Corp.

C. J. Hartwig, *Administrator Employment and Training*—Northern States Power Co.

D. M. Mitchell, *Coordinator Labor Relations*—Union Electric Co.

F. C. Prasse, *Manager Personnel Department* — The Cleveland Electric Illuminating Co.

J. S. Weeks, *Policies and Procedures Coordinator* — Consolidated Edison Co. of New York, Inc.

Training and Development

J. H. Barnard, *Director of Personnel*—Central Maine Power Co.

M. T. Dunlap, *Personnel Director* — Carolina Power & Light Co.

C. V. Hussey, *Personnel Director* — Arkansas Power & Light Co.

J. T. King III, *Personnel Representative* — Baltimore Gas and Electric Co.

R. H. Pearson, *Director of Personnel*—The Connecticut Power Co.

G. Rodman, *Training Director*—Commonwealth Edison Co.

T. N. Sewell, *Manager Personnel Department*—Texas Power & Light Co.

W. P. Walker, *Personnel Assistant*—New York State Electric and Gas Corp.

Communications

J. H. Barnes, *Personnel Director* — Indiana & Michigan Electric Co.

J. J. Benjamin, *Manager of Employment*—Central Hudson Gas & Electric Corp.

L. D. Collins, *Director of Employee Relations* — Central Power and Light Co.

C. S. Green, *Executive Assistant* — New Orleans Public Service Inc.

J. M. McConnell, *Employment Manager*—Rochester Gas & Electric Co.

H. H. Melvin, *Vice President*—Atlantic City Electric Co.

L. A. Rushmore, *Industrial Relations Mgr.*—Long Island Lighting Co.

K. Turley, *Welfare and Training Supervisor*—Arizona Public Service Co.

Developing Morale and Loyalty

A. W. Isenhart, *Vice President in chg. Personnel*—The Dayton Power and Light Co.

M. A. Kirk, *Manager Personnel Dept.* Central Illinois Public Service Co.

P. L. Metzger, *Personnel Director*—Kansas City Power & Light Co.

C. B. Sherman, *Vice President* — Houston Lighting & Power Co.

D. R. Stichnoth, *Director Employee Relations* — Iowa-Illinois Gas and Electric Co.

J. H. Westbrook, *Director of Personnel*—West Penn Power Co.

W. R. Wolfe, *Vice President*—Oklahoma Gas & Electric Co.

a talk on "Utilization of the Work Force." He will discuss among other things the dramatic changes being made by industrial management in the introduction of new tools, equipment and methods. Mr. Gleeson will comment that if members of management are to keep pace with these changes they first will have to re-evaluate the effectiveness of their own methods if they are to meet the demands of modern industrial management. Mr. Gleeson will point out that in this re-evaluation there are five basic "bread and butter" functions of good industrial relations administration that should be looked at closely: 1—recruitment, 2—training, 3—job performance, 4—the tension of employees, 5—acceptance of his ideas by Industrial Management.

Donald A. Bartlett, Director of Industrial Relations, Western Massachusetts Electric Co., will follow Mr. Gleeson with a presentation on "Training and Development." Mr. Bartlett will emphasize that each member of the management team must develop himself as well as plan the development of those for whom he is responsible. He will tell the Conference that each employee must be encouraged to take an active interest in his own development.

Fewkes to Speak

George W. Fewkes, Manager, Personnel Department, Philadelphia Electric Co., will say in his talk on "Communications" that changes can only succeed to the extent that they are understood and accepted. Mr. Fewkes will explain that "communications" is more than publishing a magazine or talking to employees. He will discuss the many and diverse activities, both good and bad, that make up communications.

C. Herald Campbell, Personnel Director, Pacific Power and Light Co., will talk on the problems of getting the uppermost echelons of management to realize that from them spring morale and loyalty. The "Development of Morale and Loyalty" is his topic. The quality of morale and loyalty will determine the extent that management may succeed in enlarging employee effectiveness.

Following the general session on Monday morning, Conference participants will be assigned to small discussion groups. These groups, which will remain together, will be scheduled for a "how-to-do-it" round table discussion of each of the subjects outlined by the four keynoters at the Monday morning session. These groups will meet Monday afternoon, Tuesday morning and afternoon and Wednesday morning. Here representatives of all areas of Management, from companies around the country, have an unequalled opportunity to exchange ideas on what is being done and might be done to meet the problems posed under the discussion topics. Conference leaders, men active in industrial relations in our industry, will be present to keep the discussions moving and within proper bounds.

'Hospitality Hour'

Other popular features of the Annual Round Table Conference will be continued this year. On Monday evening, there will be the "Hospitality Hour," the get-together period which provides an opportunity to greet old friends and make new acquaintances. As in the past, ladies are cordially invited to attend the "Hospitality Hour."

A demonstration of role-playing on Tuesday evening will have for its subject, "Employee Evaluation Problems." The Players, from the Southwest Personnel Group, will present an employee evaluation problem together with a conference between a supervisor and an employee. Finally, a grievance hearing through the medium of a role-playing demonstration will show how a grievance about an evaluation might be handled. This demonstration will realistically portray some of the problems in evaluating employees.

Printed Materials Exhibit

This year the informative Printed Materials Exhibit, open throughout the Conference, will contain significant material covering all phases of personnel work from recruitment to retirement.

The members of the Conference Committee who are planning to make this year's Conference the most interesting and valuable to date are: H. F. Carr, Manager, Personnel Department, Pacific Gas and Electric Co.; M. F. Osterling, Director of Personnel, The Hartford Electric Light Co.; C. E. Parker, Manager of Industrial Relations, Commonwealth Edison Co.; C. R. Stockhus, Vice President, Union Electric Co.; E. A. Werner, Personnel Manager, Gulf States Utilities Co., and Chairman F. M. Osta, Vice President, Niagara Mohawk Power Corp.

Registrations, which will be accepted in the order of their receipt, should be made as soon as possible. Attendance will be limited to approximately 300. Both operations and industrial relations people are cordially invited to attend.

The registration fee of $35 includes luncheons, Hospitality Hour, participation in all meetings, and a special notebook.

Registrations should be sent to E. S. Evans, Secretary of the Industrial Relations Committee, Edison Electric Institute, 420 Lexington Ave., New York 17, N. Y.

1957 Rate Book Available

THE 1957 *Rate Book* has just been published under direction of Edison Electric Institute's Rate Research Committee and now is available, Edwin Vennard, Managing Director of EEI, has announced.

This newest edition of the *Rate Book* includes rates effective to March 1, 1957. It is a compilation of the residential, commercial, industrial and certain special type rates for electric service of investor-owned utility companies operating in all cities of the United States having a population of 20,000 or more. The book contains also a listing of a number of smaller cities in states that would not be adequately represented with the 20,000 minimum, in addition to a listing of more than 6,000 communities of 1,000 population or more wherein the rates are the same as those applicable to the larger cities.

As in the past, users of the *Rate Book* will find the indexes of particular value as a guide in making detailed studies of the various types, features and special provisions of rate schedules.

The price is $20.00 per copy to member companies and $30.00 per copy to non-members.

Orders should be addressed to Edison Electric Institute, 420 Lexington Ave., New York 17, N. Y.

'Farm Better Electrically' Scores in First Months as Program

EEI's "Farm Better Electrically" program, launched early this year with the goal of doubling farm electricity usage by 1965, has received widespread acceptance and identification, the "Farm Better Electrically" Program has announced.

Electric utilities and allied industries have joined the promotion in many parts of the nation, although the program officially is just now getting under way, according to M. O. Whithed, Chairman of EEI's Farm Group and farm sales supervisor for Atlantic City Electric Co.

Under the revised structure of the EEI Farm Group, "Farm Better Electrically" is to be given special consideration. The Farm Group now consists of two Committees — the Farm Promotion Committee and the Farm Development Committee. The Farm Promotion Committee will determine the types of promotion for the program and prepare promotional materials. The Farm Development Committee will have the responsibility of preparing supporting educational materials for use in youth and adult farm educational programs.

Aims of Program Explained

The first publication of the group, *A Program of Progress for the Farmers of America,* explaining the aims of the program and why the electric industry and its allies should support it, will be available in Septemeber. The book, which will sell for $1.25, discusses how "Farm Better Electrically" can help American farmers; gives points on getting the farmer's interest and selling him ideas for his profit; what the program will do and how it can be done; how the different sponsors can cooperate and what each can do.

Also, how the electric power suppliers can help further the program; the stake of the electric equipment manufacturers in the farm market, and how farm magazines, newspapers, radio and television stations can help.

A calendar of electrical farm equipment promotions for 1958 also is included as follows: brooding, January and February; water heating, March and October; crop drying, April and September; sprinkler irrigation, May; water systems, May; farm freezers, July and August; farm chore equipment, April and September; lighting, October; ventilation, June and November; electric heat applications, December. Farm wiring is included as a part of all promotions.

Farm ventilation promotional materials will be available in November. Other specific sales promotions are being considered as continuing projects for farm lighting, water heating and many other phases of farm electrification. The FBE program is designed to help the farmer cut costs, solve farm labor shortages, boost production, improve quality and rid materials handling of its drudgery.

Under the new Farm Group setup, a Farm Better Electrically Subcommittee has been organized under the Farm Promotion Committee for the specific purpose of furthering the FBE program.

Considerable space has been devoted to the FBE program in media throughout the nation, Mr. Whithed reported. Some examples are:

Implement & Tractor magazine in its July 13 issue announced the program in a story and used an illustration of the seal.

Reddy Kilowatt Inc., New York, has incorporated the FBE theme into a number of advertising mats, using

Got a minute?
Just like to tell you that we're sending you, with our compliments, ELECTRICITY ON THE FARM beginning with this issue. You'll receive it ten times a year.
Each issue is full of practical, workable ideas, information on new products, and tips on ways to FARM BETTER . . . Electrically. You'll find many helpful suggestions for your own farm. Then, too, there are many interesting articles for the whole family - - such as the feature entitled "Electricity in the Farm Home."
We hope you'll enjoy the magazine, and should you have any questions about your electric service or electric equipment, just call your West Penn office.
WEST PENN POWER
FARM BETTER ELECTRICALLY

To familiarize its consumers with the "Farm Better Electrically" program, West Penn Power Co., Greensburg, Pa., used this ad in publications that reached the farm family. Note the FBE symbol used prominently.

Electric Companies, Reddy Kilowatt Join FBE Program

What is FBE?
What does FBE stand for? "Finer?" . . . "Better?" . . . "Efficiency?"
Yes, FBE could stand for all those things, because it really stands for "Farm Better Electrically", and there couldn't be a *finer*, a *better* or a more *efficient* way to farm.
Over the years, Garden State farmers have proven that electricity makes farming more productive and more efficient. In fact, there are over 200 jobs Reddy Kilowatt, your electric farm hand, can do on a farm.
FARM BETTER ELECTRICALLY
Yes, it's true — electricity does so much — costs so little — so farm better electrically!
PUBLIC SERVICE
Public Servant of the Garden State

FBE is headlined in this ad of the Public Service Electric and Gas Co., Newark, N. J., in the *New Jersey Farm and Garden* magazine.

Reddy Kilowatt in overalls and a farmer's hat.

American Agricultural Editors' Association, in a letter announcing the dates of its Fall meeting, Sept. 25-27 in Washington, D. C., enclosed a report on the FBE program, urging all to support it.

The *New Jersey Farm Bureau News* on April 15 carried an illustrated story on FBE.

Electric Light and Power magazine of April 15, in its "Light and Power Lines" column, devoted the full page to FBE, referring to it as a much-needed "shot-in-the-arm" for rural electrification. "If this program catches fire with farmers as 'Live Better . . . Electrically' has with the nation's homemakers, it can be a tremendous influence," P. B. Garrett, editor-in-chief, wrote.

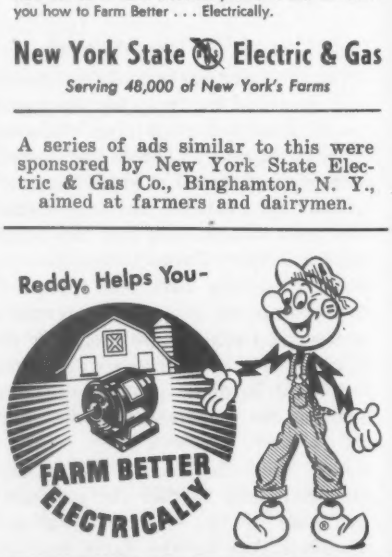
Electrical World magazine in its April 22 issue devoted space to the program.

A variation of the symbol appears on the letterhead of the newsletter of the National Association, Domestic Farm Pump Manufacturers.

The *Colorado Rancher and Farmer*

FARM BETTER ELECTRICALLY
OTHER DAIRYMEN
Are Farming Better
. . . ELECTRICALLY
NATIONAL DAIRY MONTH is a good time to take a fresh look at YOUR dairy operation.
HEALTHY, COMFORTABLE COWS PAY BETTER
Check your barn ventilation. Modern electric ventilation has proved it can keep cows healthier, increase production. Don't wait till next fall to study this problem.
HAY DRYING LOWERS FEED COSTS, INCREASES MILK PRODUCTION
Barn-dried hay the electric way can save up to $50 per cow annually in feed costs.
NEW, IMPROVED REFRIGERATION
Bulk milk handling with modern electric refrigeration gives a better product, and more profitably.
CHECK YOUR CHORE TIME AND LABOR
Remember, most of the work required on a dairy farm is in and around buildings where labor-saving with electricity can save time and cut production costs. This means
AN ELECTRIC WATER SYSTEM
ELECTRIC WATER HEATING FOR EASY SANITATION
ELECTRIC MILKING AND MILK HANDLING
ELECTRIC SILO UNLOADING
ELECTRIC BARN CLEANING
ARE YOU FARMING BETTER . . ELECTRICALLY?
To make sure you're using electricity on your farm to its best advantage, take advantage of the planning and consultation service of our Farm Service Representative. He's trained in farm electrical problems and can show you how to Farm Better . . . Electrically.
New York State Electric & Gas
Serving 48,000 of New York's Farms

A series of ads similar to this were sponsored by New York State Electric & Gas Co., Binghamton, N. Y., aimed at farmers and dairymen.



Farmer's clothes have been donned by Reddy Kilowatt to help publicize the FBE program. Reddy Kilowatt, Inc., New York, offers a series of ads tieing in the new program.

on Sept. 28 will publish a number of articles promoting the use of electricity on the farm and will illustrate them with the "Farm Better Electrically" symbol.

West Penn Power Co. carried a full page ad in the June-July issue of *Electricity on the Farm* magazine, with the symbol illustrated. The magazine twice used "Farm Better Electrically" message as fillers and the illustration once.

The North Central Electrical League, Inc., Minneapolis, is using the symbol on its flyers for its *Manual on Materials Handling*.

New York State Electric & Gas Corp. used the symbol prominently in a series of advertisements aimed at the farm consumer.

Tractor Co. Ties In

Whitney Point Tractor Co. in Binghamton, N. Y., featured a "Live Better . . . Farm Better Electrically" sale, with Paul Burnett, farm service representative of NYSE&G, in attendance to answer questions and plan the layout of farm electrical installations.

The *New Jersey Farm and Garden* magazine in its May issue carried a full-page ad into which FBE was incorporated from Jersey Central Power & Light Co./New Jersey Power & Light Co.; a full-page ad from Public Service Power & Light Co. which asked in huge headlines "What is FBE?" The question was answered in this ad and the symbol prominently displayed. In the same issue Atlantic City Electric Co. used the symbol in a full-page ad, and the Farm Electrification Council of New Jersey ad was printed in two colors, devoted almost entirely to the symbol of "Farm Better Electrically."

Westinghouse Joins

In May, the *Westinghouse Electric Bulletin*, published by Farm Youth Activities, Power Use department, printed a story on the launching of the new program and illustrated it with the symbol.

The *Farm Electric Newsletter* of North Central Electrical League also carried a story on the program and reproduced the symbol several times. One of the ads occupied a quarter of a page.

Consumers Power Co. in its ad for modern electric water systems in the May 4 *Michigan Farmer* displayed the FBE symbol in a very prominent location.

The "Farm Better Electrically" symbol in red on a gold background is being used extensively as stickers. The first step EEI took in launching the new program was to print stickers and decals of the circular symbol which shows an electric motor in the center, with an end view of a barn and silo in the top center and the words "Farm Better Electrically" occupying the bottom portion of the symbol.

Benefits of FBE

The various benefits which the "Farm Better Electrically" program will provide were indicated by Mr. Whithed as follows:

To the farm consumer—better products at a lower cost.

To the processor—better quality product for sale; a more uniform product at less cost, assuring a better and more stable market.

To merchants serving the farmer in rural areas—greater buying power for the farm family, giving him a better opportunity to sell his product both on the farm and in the home.

To the electrical contractor—more money for the farmer to spend contracting work and less "do-it-yourself" by farm families.

To the electrical equipment manufacturer — new potentials for new products which are unlimited in this field; a greater replacement market and better sales for the existing products.

To the electric power supplier—greater loads on rural lines where capacities are now generally above the demands and in many cases it will mean a better load factor for the utility. Example: A utility with high demand on its system in the summertime should sell the farmer incubators, brooders, hot beds and poultry house and general farm lighting which could be used during the winter months when the load demand on the power lines may be lower.

The next publication of "Farm Better Electrically" will be a 32-page two-color consumer booklet to be utilized as a handout or mail piece. It will contain text and illustrations pointing out to the farmer the many ways he can use to better advantage electrically-operated farm productive equipment.

Unique Safety Record of Ralph Finnell

AFTER 38 years of service, Ralph Finnell retired Aug. 9, with a unique safety record—a record that is thought to be unmatched in the electric utility industry.

Finnell has been superintendent of Kansas Gas and Electric Co.'s Ripley Plant since the plant first went on the line in 1938. In those 19 years of full-time 24-hour-a-day operation, no man at Ripley Plant has ever suffered a lost time accident.

Gordon W. Evans, KG&E president, declared that as far as he knew "no plant and no superintendent in the entire electric utility industry can match that safety record."

The record was maintained even while construction was going on during the plant's expansion in 1948 and 1949. Ripley Plant now has three generating units, with a total capability of 94,300 kilowatts. The plant has never been shut down, although individual generators have been halted periodically for overhaul and repair.

The plant was named for L. O. Ripley, former president of KG&E.

Company officials believe the plant's unique safety record stems from Finnell's intense personal devotion to safety.

The Cause of Accidents

"I saw a man killed by an electric power line once, many years ago," Finnell said. "I knew him. The accident was completely unnecessary. He just wasn't thinking. Later I came to believe that was the reason for all accidents. Accidents could be prevented if the work was completely planned ahead.

"So when Ripley Plant started, that became our first rule: No job is so rushed that we can't take time to plan it properly. Our men are trained not to take chances," Mr. Ripley said upon retirement.

Born in Arkansas City, Kansas, Finnell began his career with KG&E Feb. 25, 1919.

He became test engineer for the Wichita Plant in 1922. He was assistant superintendent for the company's Neosho Plant southeast of Parsons, Kansas, from 1923 to 1938.

He became Ripley Plant's first superintendent in 1938.

This specially designed computer room at Consolidated Edison is equipped with soundproofed walls and ceilings, recessed lighting and air conditioning. In center is operator's console with tape input and output equipment on his right and to the front. In right to foreground is card to tape converter where data is read from cards to tape for fast introduction into computer, enclosed in glass case at left.

Electronic Data Processing of Stockholder Records

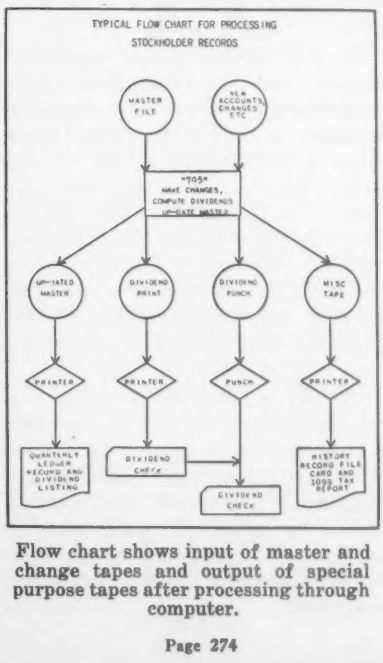
By Cortland G. Pohle and James J. Gannon

Assistant Treasurer, and Programmer, respectively, Consolidated Edison Co. of New York, Inc.

A MAJOR advance in mechanizing stockholder records has been made by the Consolidated Edison Co. of New York, Inc., with the conversion of all preferred stock records to electronic data processing equipment. The original manually-prepared ledger accounts have been transferred to magnetic tape. Once each quarter the master record tape and a change tape that contains new stock transfer information for the quarter are merged through an IBM 705 computer to up-date the master record tape and to compute the amount of each dividend payment.

Programming the operation from a completely manual bookkeeping procedure to a fully mechanized system took two men a year to complete. During this time machine-codes were devised to classify stockholder types, geographical locations by state or country, foreign tax rates and so forth. At the same time punch cards were designed to take care of any type of stock transaction the programmers found in the studies of past files; that is, anything from changing an address to handling complex broker accounts.

Each operation must be included in the program, which is the set of instructions fed to the machine at the beginning of a "run" to direct it through each step of the bookkeeping process. Once the cards were designed and printed, the job of punching the information required for the conversion began. When punched, the cards were used to convert the initial data to tape which fed the data into the computer.



Flow chart shows input of master and change tapes and output of special purpose tapes after processing through computer.

Each account was assigned a number to identify the cards which would read data on that account onto tape or into the computer. This is of prime importance inasmuch as each certificate listing, each line of the address and all other insertion or deletion data required a separate card. To transfer the account of an average stockholder with just one certificate took five cards to read the account onto the first master record tape.

The heart of the system is the memory unit, which is capable of storing as many as 20,000 characters of information and the arithmetic and logical unit. This unit performs the mathematical calculations and comparisons, using information taken from memory and acting in accord-

ance then with the stored program.

Auxiliary or peripheral equipment includes the operator's console from which the operation of the machine is controlled and additional instructions added when required, input devices such as card readers and/or magnetic tape units, and output devices such as output tape units, card punches and high speed printers.

Normally both input to and output from the central processing unit will be controlled by tape units because of their higher operating speed. The machine is capable of working directly from memory to card punches and printers, but slower operating speeds of these auxiliaries decreased the effectiveness of the computer. Output tapes normally will be used with additional equipment for print-outs or card punching without involving the central processing unit.

This shows a closeup of the operator's console of the IBM 705 installation at Consolidated Edison. From console he can control the computer's operations by watching a series of lights on the board in front of him.

Initial Programming

Initial programming of the system included coding the machine instructions and punching them into cards. These were then transferred to tape which must be read into the machine at the beginning of each operation. Stockholder records were likewise punched and transferred to the first master file tape. This tape is the permanent stockholder record. Each quarter it is up-dated during a simultaneous file maintenance and dividend computation run when the master file tape and a change tape, which represent changes in stockholder accounts during the current quarter, are merged. Closed accounts are deleted, new accounts are inserted in their proper alphabetic sequence, changes in the number of shares held in existing accounts and changes of address are made to form a new master file tape containing the current status of the accounts.

The new master tape will contain a complete record of the account since its inception including serial numbers of all certificates issued to the account whether currently outstanding or surrendered. At the same time the computer prepares a dividend check print tape, a dividend check punch tape and a miscellaneous tape on separate output magnetic tape equipment.

The up-dated master file tape is run off on a high speed printer each quarter to provide an up-to-date printed record for reference during the succeeding quarter of the year.

This record contains the account number, the stockholder's name and address, the names and addresses of banks or other agents to whom dividend checks and other material are to be mailed, stock certificate numbers, the date and number of shares issued and, if certificates have been surrendered, the date of the surrender.

The print-out also shows the total shares owned by the stockholder, the amount of the current dividend, the cumulative dividend for the year and certain required statistical data. The listing is used as the ledger and dividend record in the following quarter.

The three remaining output tapes are special application tapes. The dividend check print tape, as the name implies, contains the name and check-mailing address of the stockholder, the amount of the dividend, and his account number and is used to write the dividend checks.

There are several accounting control features which have been built into this operation.

First, the account number coincides with the check number and is prepunched in the check by the supplier.

Secondly, the three low order digits of the check number-account number are printed on the tear strip of the continuous form checks so that the operator of the high speed printer can compare these with the number preprinted on the check to insure that the correct check is being printed for the correct account.

When the checks have been written they are placed in a form-detaching machine which removes the tear strips, separates the individual checks and imprints a facsimile signature on the check. They are then sequence checked and run through a tape to card punch, which uses the second special purpose tape, the dividend check punch tape, to punch in the amount of the dividend and a two digit geographic code which can be used to sort the checks by mailing destination if zone mailing rates are ever adopted.

The tape also double punches the account-check number to insure that the checks are in numeric sequence and are being punched with the correct dividend payment.

Checking System

If a check is out of sequence or is missing the machine will stop automatically and indicate a "punch check" and the error can be corrected. This checking system is designed to insure that the amount punched in the check is the same as the amount printed on the check.

The miscellaneous tape collects small amounts of specialized information in the course of the file maintenance and computational run and eliminates the necessity for providing several tape units to record a small volume of information. Each type of

information recorded on the miscellaneous tape is coded for identification and written on the tape in the form required for printing. The tape is then processed through the data processing machine to prepare individual tapes to separate the data. Data included on the miscellaneous tape are:

1. Zero Accounts—when a stockholder has disposed of his entire holdings, the account is deleted from the master file tape and recorded on the miscellaneous tape. A zero balance account tape is prepared from the miscellaneous tape in the sorting routine and is used to prepare a history record file for the closed accounts.
2. Tax tape—when dividends have been paid in prior quarters of the calendar year on an account which is reduced to a zero balance, Internal Revenue Service Form 1099 must be prepared. This tape gathers information necessary for preparation of the tax form and is used to print it on the form.
3. Additional information—stockholders are classified by type, i.e., men, women, broker accounts, etc., geographic location, and number of shares held, for management surveys.

Additional Tasks

In addition the computer prepares tapes from which proxies are printed. Tapes are also prepared as required throughout the year to print labels for mailing the annual report and any other information sent to the stockholders. Finally, a tape is compiled to run off Internal Revenue Department form 1099 on all accounts at the end of each calendar year.

The file maintenance and dividend computation run is made on the data processing machine only once each quarter. Interim changes in stockholder accounts are kept on interpreted punch cards as a supplement to the print-out of the last master file tape. The cards are prepared from posting tickets for certificates issued and surrendered.

Additional cards are prepared for changes of stockholders' addresses or changes of his designated dividend payee.

The cards are retained by the Stock Transfer Bureau throughout the quarter and are used in conjunction with the print-out of the master file tape to maintain an up-to-date record of the status of stockholder accounts. They are returned to the Machine Accounting Department after the next record date for conversion to magnetic tape. This tape is then introduced as a change tape during the file maintenance and computational run for the quarter just closed.

Application to Common Stock Accounts

This program was prepared for the preferred stockholder accounts, but it will also apply to the common stock accounts when they are converted to electronic data processing in the near future. At present some 23,000 accounts, all the preferred, are processed by the computer. There are approximately 145,000 common accounts on record at this time.

Applications of electronic processing of stockholder records have greatly reduced the time and work entailed in preparing quarterly records and dividend checks, but as yet the transfer section of the operation has not been mechanized.

As the system now operates, typed stock transfer register sheets are prepared daily as a company record of certificates issued and surrendered; a carbon copy of these sheets serves as a posting medium for the preparation of punch cards. Machines are now in the development stage which will mechanize the operation by automatically punching the new cards as the transfer register is typed. Several systems have been proposed, but further experimentation is necessary before they can be adapted for use.

The computer's ability to sort a mass of facts and figures into a useful pattern lies in the capacity of its memory and its electronic operating speeds.

Capacity of the Memory

The memory can store 20,000 characters of information and recall them in 17/millionths of a second. It reads data off magnetic tape at the rate of 15,000 letters or numbers a second and can add or subtract five-digit numbers in 120/millionths of a second or divide two such numbers in less than 1/2000ths of a second. In addition to high speed addition, subtraction and division, the machine can multiply five-digit numbers at the rate of 75,000 per minute and is capable of making 1,764,000 logical comparisons or decisions in a minute.

As complex as the job is, processing Consolidated Edison's preferred stockholder records occupies but a fraction of the computer's time. It takes just *a little more than an hour* to update the master file and prepare tapes for printing dividend checks and records of the 23,000 accounts.

The machine also handles payrolls, making tax, insurance, social security and savings deductions for 23,000 weekly, 2000 bi-weekly and 1000 monthly employees, as well as inventory record and inventory control operations for more than 140,000 storeroom items.

The preliminary work leading to application of the computer system to stores accounting and to keep track of more than 4,500,000 outside plant inventory items is in process. The use of electronic data processing equipment in this field will make it possible for this huge volume to be processed with greater speed and efficiency than with present equipment.

It is anticipated that when the conversion is complete, all general accounting functions, such as plant accounting, accounts payable and general accounts, will be processed by this same computer.

COPIES AVAILABLE NOW

•

Proceedings
National Conference
of
Electric and Gas
Utility Accountants
Washington, D. C.
April 8-9-10, 1957

Member Price—$5.00

Non-member Price—$7.50

•

Send orders to:

EDISON ELECTRIC INSTITUTE
420 Lexington Avenue
New York 17, N. Y.

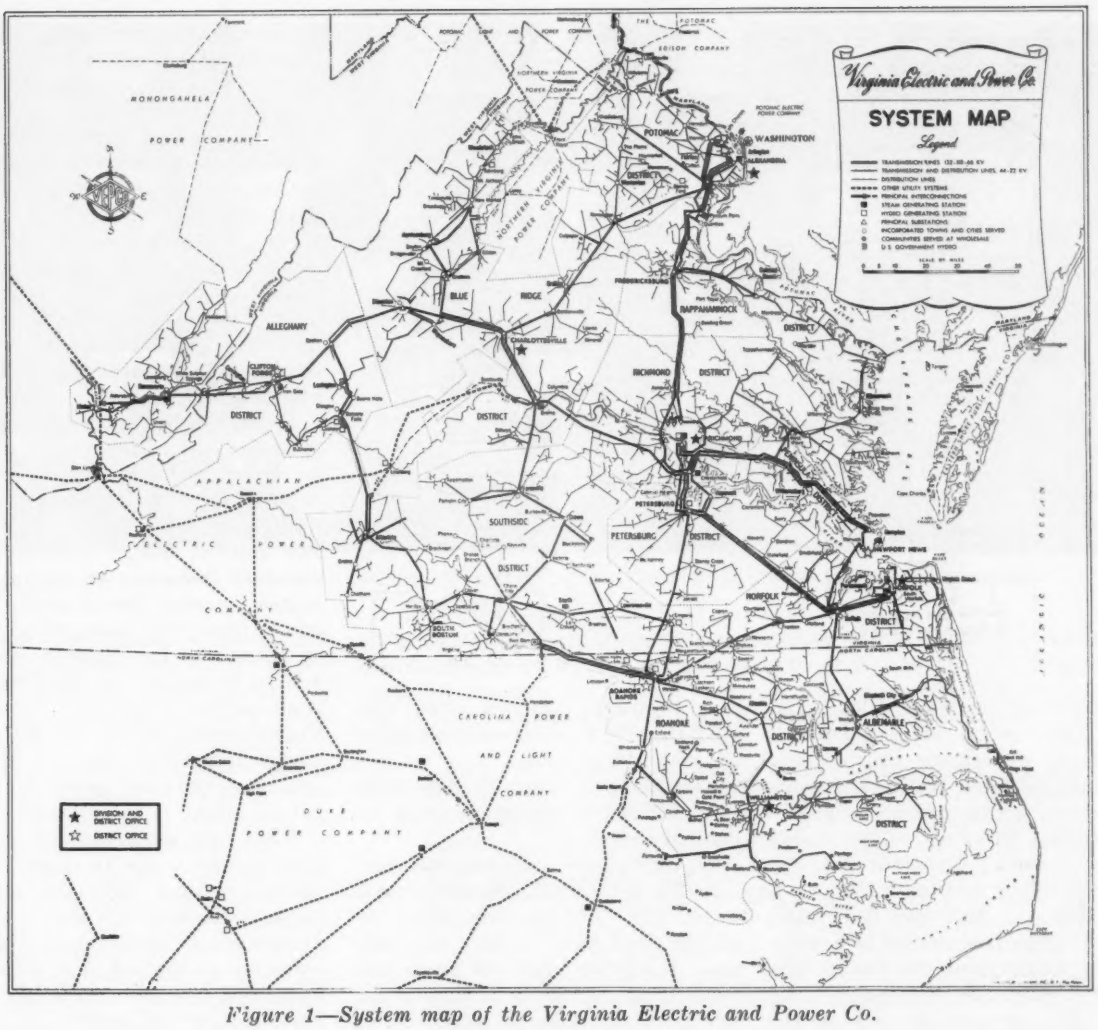


Figure 1—System map of the Virginia Electric and Power Co.

Automatic Control of Generation on the Virginia Electric and Power System

By Harrison Hubard

Chief System Operator, Virginia Electric and Power Co.

Presented before the 72nd Meeting, EEI Electrical System & Equipment Committee, Buffalo, N. Y., May 21, 1957

IN order to understand the problem involved in controlling our generation, it is necessary to present a brief description of our generating and transmission equipment.

The VEPCo system covers 32,000 square miles and provides service for 688,800 customers. Our service area includes most of Virginia, and parts of North Carolina and West Virginia. We have recently placed in service our first 230 kv line, however, our transmission system is largely 110 kv. We have about 2,300 miles of 230 kv, 132 kv, 110 kv and 66 kv. Our generating facilities include eight steam stations, the largest having a capability of 260 mw. The recent additions to our steam stations have been 100 mw units. The next addition, scheduled to be in service in June, is a 150 mw unit. Another 150 mw addition is under construction with several others authorized. We have 12 run of the river hydro stations and one peaking hydro station with a capacity of 100 mw. Two-thirds of the output of Kerr Dam, a government project, is received into our system under the terms of a contract with

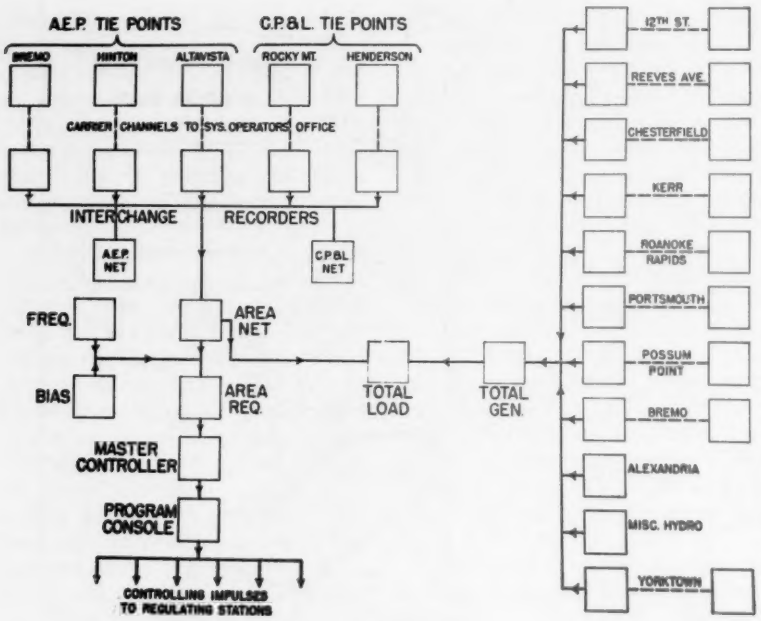


Figure 2

the Southeastern Power Administration. The system map, Figure 1, shows the generating stations and transmission lines. We have five major interconnections with neighboring utilities, three with Appalachian Electric Power Co. and two with the Carolina Power and Light Co.

In 1929 the first step was taken toward centralized control of generation by establishing the System Operator's Office in Richmond. This move did not provide any of the equipment as we know it today but it did fix the responsibility for providing sufficient generation to supply the system load. Communication from this location was by company owned and leased telephone lines to the generating stations and the interconnection point with the Carolina Power and Light Co.

The number of interconnections increased gradually, along with the new generating stations and transmission lines. The generation control during this period was based on information received from an operator stationed at Roanoke Rapids, N. C., where meters showing the interchange with CP&L Co. were located. This operator was required to call the System Operator's Office whenever the interchange with CP&L Co. departed from schedule enough to make a change in generation necessary.

A contract was negotiated with AEP Co. which increased the number of major interconnections to five, thus making it virtually impossible to continue the simple operation described above.

In 1950 a new building was constructed to house the System Operator's Office and the equipment required to provide tie line load control. Telemeter channels were provided from Richmond to each of the five interconnecting points to furnish visual indication of the line loadings and to provide the intelligence required by the control equipment. In the initial installation, control was provided for two of our least efficient stations, as it was thought that maximum efficiency would be obtained by base loading the more efficient stations and taking the load changes on less efficient stations.

Equipment Improved

The equipment available for automatic load control was improved considerably during the period following our initial installation. Because of this and the obvious need for automatically controlling a larger amount of generation, our console was replaced with an improved type which provided for control of six generating stations. This control was one of the first to provide adjustable economic loading and simultaneous loading rather than sequence loading of company generating stations.

A partial schematic drawing, Figure 2, shows the relationship of the various parts of the equipment. The five tie points (interconnections) have graphic wattmeters installed to record the power flow on each tie point and to furnish the intelligence to be transmitted over power line carrier channels to similar wattmeters in the System Operator's Office.

The algebraic sum of the readings of these meters, called the "Net Interchange," indicates the power flow into or out of the system at all times.

The frequency meter furnishes a record of system frequency and also, as determined by the bias setting, determines how much our system should generate above or below our own load to assist in maintaining standard frequency on the interconnected systems. The quantity determined from "Net Interchange" plus or minus the contribution required due to departure of the frequency from normal is known as the "Area Requirement" and is applied to the master controller causing it to originate the required controlling impulses, either raise or lower.

These impulses reach the program console where the settings for the various stations filter the impulses to the stations which should change generation in accordance with the economic loading schedule which has been set into the console. These impulses are transmitted by power line carrier to the generating stations and after being again filtered through the station equipment reach the generators' governor meters.

The program console is the heart of the control system since by its use the economic loading of the stations is accomplished. A section of the console is provided for each station able to be controlled. Various dials are provided to enable the operator to set the high and low limits for the station, the amount by which it is desired that the stations participate in system requirements for increased generation, reduced generation and finally a base point which is the intersection of the two segments which define the station loading curve.

We have found that by automatically controlling six stations with a capability of 965 mw, we are able to accurately maintain our generation so that our "Area Requirement," or generation error, is rarely in excess

Control console for automatic load control on the Virginia Electric and Power System is shown here.

of 10-mw. The stations controlled automatically represent about 70 per cent of our generating capacity.

The economy achieved by this type of control is probably of interest. Our system operators have before them an incremental loading slide rule which shows the incremental rate in dollars per mwhr for each station at current fuel costs and conditions of generating equipment. The accepted solution to the loading problem is to have all stations at the same incremental rate for most efficient generation. The control makes it possible to keep each station at the same incremental rate within very close limits. We are able to vary the load between stations to meet minor operating problems or other conditions as they arise.

One of the problems that we are constantly working with is the integration of the output of the two large hydro stations on our system with the remainder of the large stations which are all steam stations. One of the hydro stations is the government project known as Kerr Dam which is controlled by our equipment just as the VEPCo stations on the remainder of our system. The other large hydro station is at Roanoke Rapids, down stream from Kerr Dam on the same river.

Our company receives into its system two-thirds of the output of Kerr Dam, scheduling the generation as desired to achieve maximum economy. Some seasonal storage is possible at this project and almost unlimited daily storage. As far as operating considerations are concerned we are usually furnished with a weekly figure representing the amount of energy that can be scheduled during the following week. This amount is sufficient during normal river flow

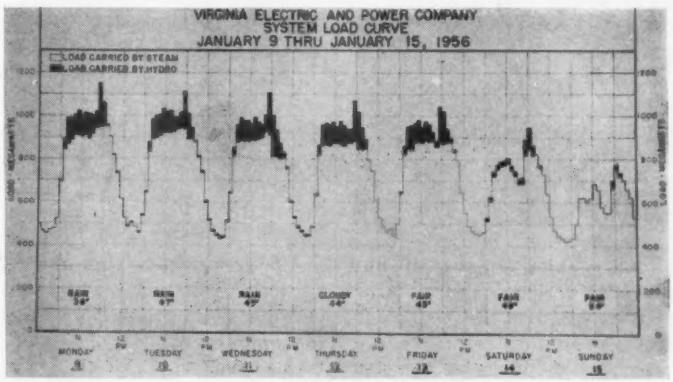


Figure 3

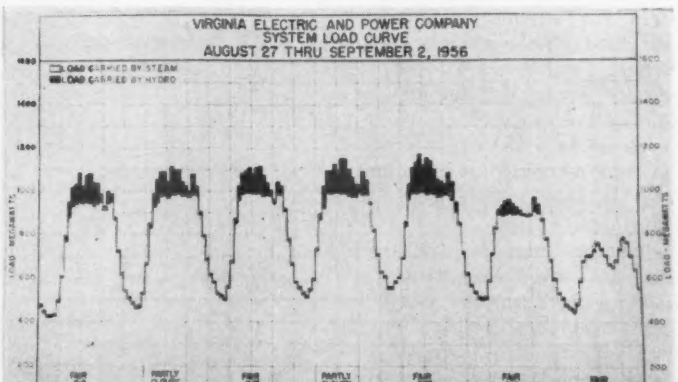


Figure 4

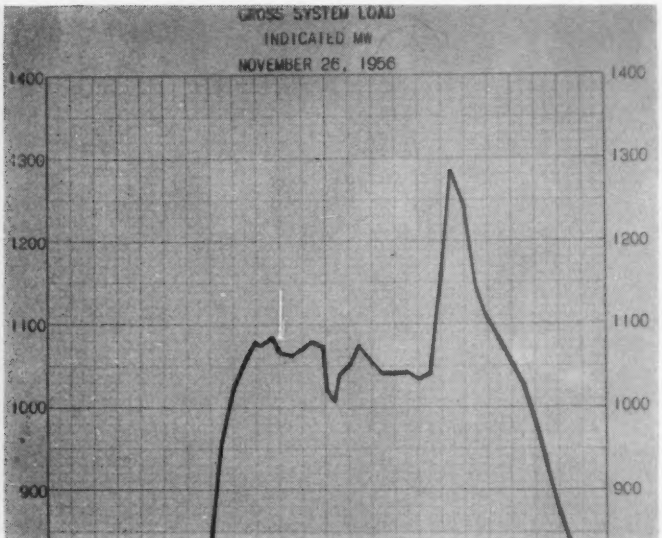


Figure 5

periods, for peaking operations but is insufficient for base loading. Our problem then is to fit the available hydro generation into our schedule during the periods when we can use it most economically.

Our method of doing this is easier to explain for summer conditions when our load climbs rapidly until about 9 a.m., then levels off and increases only gradually during the remainder of the day.

Our peak load for the day is sometimes in the morning, just before noon, and on very hot days in the early afternoon.

By using the shape of the load curve that has been observed on previous days and by using the weather forecast for temperature and light conditions we are able to make an approximate predicted load curve. By the use of this curve we are able to fit the known amount of peaking hydro energy available into the curve so as to replace the most expensive steam generation. This generally results in a constant load on our steam stations from 9 a.m. to 10 p.m. with the amount based on our predicted load curve.

The peaking hydro then begins to generate just before the steam reaches the constant value determined for the day and takes all fluctuations in load during the day until the load drops to the point equal to the load carried by the steam stations. The hydro stations are then shut down and further load drops are taken care of by the steam stations. Figures 3 and 4 show graphically the result of typical weeks operation.

We are able to use the control equipment to accomplish the program outlined above with very little manual operation. We do this by setting the participation of the steam stations to 100 per cent until the point is reached where it is desired to use the peaking hydro. At this point by manipulation of the controls the operator reduces the participation of the steam stations to zero, thus holding them at a constant load while the participation of the peaking hydro stations is increased to 100 per cent, making these two stations responsible for all increases for the remainder of the day.

As the load drops in the evening the reverse procedure is followed. There are two principal advantages to this method. First, the available hydro energy is used at times of highest loads which would be most expensive to carry with steam generation. Thus our limited hydro generation results in the maximum savings in fuel costs. Second, improved operation is possible on our steam stations when the load changes are reduced to a minimum.

The question that naturally arises is: how does this plan work? We have many weeks of summer opera-

(*Continued on page* 284)

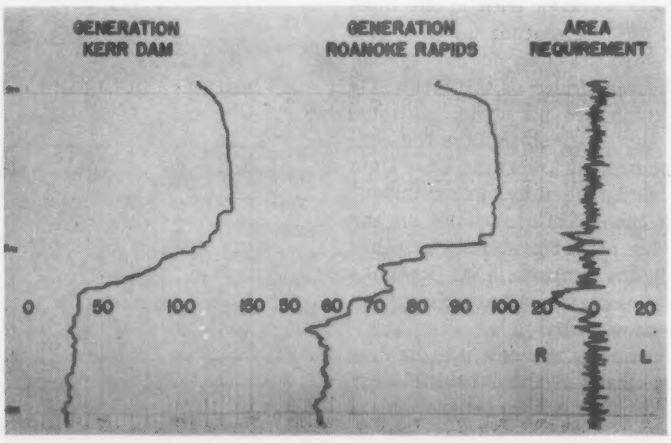


Figure 6

Two More EEI Medals Are Presented for Heroic, Life-Saving Action

ALERTNESS and skill in life-saving techniques have been rewarded recently with the award of two more Edison Electric Institute Resuscitation Medals to linemen from Pennsylvania Electric Co., Altoona, Pa., and from Community Public Service Co., Ft. Worth, Texas. This brings to 460 the number of EEI Medals to be given since they were authorized in 1933.

When the lives of their fellow workers hung in the balance, the recipients of these awards were quick to respond with effective and unselfish action as the dramatic stories of the individual cases testify.

The EEI Medal for which employees of electric light and power companies are eligible is not only a symbol of humanitarian achievement, but has historical value as well. Included in the composition of the metal from which awards are struck is copper from the original mains laid in New York City by Thomas A. Edison as part of the first underground system in the world for supplying current for electric light and power.

The medal, awarded for resourcefulness in applying artificial respiration to revive victims of electrical shock, is symbolic of teamwork, reflecting life-giving power that can be transmitted through hands of an employee performing resuscitation to a co-worker felled by electric shock. The phrase *Gratia Dei per Manus Socii in Opre*—"By the Grace of God, Through the Hands of a Fellow Worker"—is inscribed on the medal in keeping with the classical traditions which give high place to devotion to duty, selflessness, and preparedness through training, the foundations of man's greatest privilege—the saving of life.

Accounts of the events which resulted in the recent presentation of the EEI Medals are as follows:

EMERY LOMAN, JR.
Pennsylvania Electric Co.
Altoona, Pa.

On Sept. 28, 1956, the Spangler operating crew of the Pennsylvania Electric Co. was working in Carrolltown, Pa., replacing a 35-foot pole with a 40-foot pole in order to install a 10-kva transformer. The existing facilities—including two 11,000-volt conductors—were to be transferred.

Second Class Lineman Oscar Anderson had climbed the old pole which was to be replaced and had belted in directly below the braces above the secondary rack.

He untied one of the conductors and handed it to Emery Loman, Jr., lineman who was stationed on the new pole, approximately five feet above Mr. Anderson. Lineman Donald M. Connah was working on a pole two spans south of the one that was being replaced. Mr. Loman placed the conductor on a new crossarm he had installed on the new pole.

Line crew of the Pennsylvania Electric Co. looks on in approval as W. H. Wade, center, vice president of the company, presents EEI Medal and Certificate to Lineman Emery Loman, Jr., for saving the life of fellow worker Oscar Anderson, third from left, when Mr. Anderson contacted a 11,000-volt energized conductor.

R. L. Bowen, right, president, Community Public Service Co., presents EEI awards to three company linemen who helped in saving the life of a fellow worker. From left, are: C. E. Whippo, CPS Panhandle manager; W. D. Huffman, who received a Medal Miniature, Doyle Hume, who received a Certificate of Assistance, and James L. Brooks, the EEI Medal.

Mr. Anderson shifted to the opposite side of the pole and attempted to untie the other conductor, making an electrical contact with his left hand. Fire flashed from his left hand and left foot which was in contact with a one point secondary rack whose thru bolt was in contact with the neutral wire on the opposite side of the pole.

Paul Wharton, crew foreman, directed Mr. Loman to attempt to free the injured man. In one motion Mr. Loman swung to the other side of the pole and put on his rubber gloves. He attempted to break contact by pulling on the victim's right arm. Mr. Anderson's right hand was holding the top part of the crossarm.

Again Mr. Loman pulled Mr. Anderson's arm and contact was broken. The victim slumped in his body belt. Mr. Loman climbed underneath the victim, got him on his own body belt and began to apply pole top resuscitation. It appeared Mr. Anderson was not breathing at the time but shortly after artificial respiration was started he began to mumble.

In the meantime, Lineman Connah had climbed up the pole to lend assistance. The two linemen placed a rope around the victim, discontinued resuscitation and with the aid of the rest of the crew lowered the injured man to the ground.

Vehicle Operator Henry J. Bearer had gone for a doctor and secured Dr. C. K. Bauer in Carrolltown who gave emergency treatment. Mr. Anderson was admitted to the Spangler Hospital. The report of Dr. J. A. Murray indicated he had third degree burns of the left leg from mid-thigh to foot; third degree burns to the left hand, arm and shoulder, with the left thumb burned off and index and middle fingers charred to the bone. He was severely shocked and had internal burns.

The medal was presented to Mr. Loman at a dinner for the employees of the Ebensburg district. Mr. Anderson was present at the dinner. W. H. Wade, vice president of the electric company, made the presentation to Mr. Loman. Stories of the heroic action were published in *The Portage Dispatch* and the *Barnesboro Star*.

These stories paid tribute to the heroic action of Mr. Loman and praised his quick-thinking in coming to the rescue of Mr. Anderson, an act which saved a fellow-worker's life.

JAMES L. BROOKS
Community Public Service Co.
Fort Worth, Texas

On the afternoon of Nov. 3, 1956, linemen from Central Division, Community Public Service Co., were helping Panhandle Division re-insulate a highline near Spearman, Texas. Lineman Albert (Bob) Wilcox was replacing 33-kv insulators with 66-kv insulators on a line originally spaced for 66 kv. The crew was working under R. H. Kundts.

While working on a transposition pole, Mr. Wilcox changed out the insulator and tied the conductor back in on the field side of the lower crossarm. He ascended the pole and buckled off between braces of the top crossarm. Then he reached out for the hot stick which was attached to the top conductor and his left elbow contacted the lower 33-kv wire.

Lineman James L. Brooks who was on the pole with the victim worked swiftly and efficiently to break the contact and alternately beat out flames from the unconscious victim's clothing and administered artificial respiration.

W. D. Huffman, lineman, climbed the pole to help Mr. Brooks support Mr. Wilcox and continue with artificial respiration.

Lineman Doyle Hume attached a handline so the injured man could be lowered to the ground.

Artificial respiration was continued until doctors and an ambulance arrived. Dr. Perry M. White of Spearman arrived about 30 minutes after the accident. Dr. White found the patient ashen gray and with evidence of burns of clothing over the left shoulder and arm and both legs.

Mr. Wilcox was removed to a Perryton, Texas, hospital and from there flown to Fort Worth to the Harris Hospital. He suffered from gas gangrene and lost his left arm and both legs.

The EEI Medal was presented to Mr. Brooks and other awards were made to Mr. Huffman and Mr. Hume at a ceremony in Perryton on May 8. Mr. Huffman received the EEI Miniature Medal and a Certificate of Assistance and Mr. Hume the Certificate of Assistance. The awards were presented by R. L. Bowen, Community Service president. About 75 representatives of the company and several visitors were present at the dinner when the awards ceremony took place.

Stories of this heroic action appeared in several newspapers in the area.

Mr. Bowen paid high tribute to Mr. Brooks for his action and to the safety training he had received.

Mr. Brooks was the third Community Public Service employee to receive the Edison Medal. Previous awards were made in 1935 and in 1952.

Recent EEI Publication

Time-Current Characteristics of Branch Circuit Protective Devices for Low-Voltage Interior Wiring Circuits

EEI Pub. No. 57-9. A report of the Joint Committee of the Edison Electric Institute and the National Manufacturers Associatian on Time-Current Characteristics of Branch Circuit Protective Devices. Four pages. Price: 25 cents.

This report presents in tabular form the performance characteristics for 15-ampere and 20-ampere branch circuit protective devices which meet the directives of this Joint Committee. It was the conclusion of the Committee that approval of the performance characteristics of the 15-ampere and 20-ampere devices was urgent because they represent the bulk of devices presently being fabricated.

A Catalog of

EEI Publications

is available upon

request to:

Edison Electric Institute

420 Lexington Ave.

New York 17, N. Y.

Accident Prevention Committee Meeting

R. W. White, *Chairman*

THE 63rd meeting of the Accident Prevention Committee at Miami Beach, Fla., April 29-May 1, was attended by 65 utility representatives and their guests.

An opportunity for interchange of ideas for Accident Prevention with members of the Southeastern Electric Exchange was provided since that group met in conjunction with the EEI Committee.

Basic statistics for 1956 presented by F. G. Harriman of New England Electric System showed a continuing downward trend in frequency rate to 6.84, in severity rate to 1,384 and in the number of fatalities to 109. The trend indicates that our industry's efforts to reduce the number and severity of injuries are making slow but steady progress.

Personal injury reports giving the details on about 25 per cent of the fatal accidents which occurred in 1956 were received by EEI Headquarters by mid-April. S. H. Young of the Hartford Electric Light Co. submitted a summary of the 85 fatalities for which confidential reports had been received. It is estimated that the number of fatalities in all categories will be substantially under the 15-year average. Probable reduction in the number of fatalities to men doing line work on poles through electric contact with hands, arms, or head is particularly gratifying.

Erroll Dunbar of Potomac Electric Power Co. reported on the Committee's continuing study of electric shock and burn injuries. Because, in spite of a special appeal, only about half of the companies having such injuries had sent in reports, the experience covered by his report was incomplete.

Ray Metzger, Toledo Edison Co., pointed out that workmen's compensation costs are steadily increasing, and reduction seems possible only through stopping the accidents.

D. F. Hayes, Chief of the Safety and Fire Protection Branch, U. S. Atomic Energy Commission, discussed the ingredients of the AEC's safety program which he defined as a conscientious effort to avoid accidents. Personal selection, training and careful planning of each step have produced a low accident frequency record for the atomic operations. There have been only two radiation fatalities and they occurred in early days during "barehanded experiments," when methods not tolerated today were used.

W. W. Allison, Safety Engineer, Atomic Power Division, Westinghouse Electric Co., discussed the work of a safety engineer in an atomic reactor generating station. It includes all of the usual problems, many of the special problems of all industry and the particular problems of radiation. The need to develop a proper safety attitude is the same for PHD's as for others.

Coon Describes Line Work

Chet Coon, retired, gave the meeting food for serious thought in describing his many experiences in line work. He has always felt that all possible steps should be taken to stop electric contact injuries as they are both morally and economically unsound and in his opinion this should be more keenly realized. Avoidance of such injuries, we will find, will come by improving the design of equipment used, particularly in overhead line construction so that work will be inherently safer, he said.

In the area of resuscitation the continuing work on the development of equipment for counter-shock defibrillation was described by William Bremner, Commonwealth Edison Co., and Dr. Kouwenhoven, Johns Hopkins University. The application of counter-shock with the equipment developed will not injure one whose heart is not in fibrillation. Four medical task force committees are working on their assignments.

The reports of other subcommittees indicate satisfactory progress and a substantial amount of hard work.

R. E. McCann, Southern California Edison Co., announced that the Specifications For Linemen's Climbing Equipment approved by the Accident Prevention Committee is now being released and shortly will be available to the industry.

The Round Table discussion under the guidance of A. J. Naquin of New Orleans Public Service Inc. was very informative.

A Special Forum in regard to uniform reporting of industrial injuries under the guidance of J. R. Hanford, Public Service Gas and Electric Co., indicated the value of such special discussions, since it pointed out the fact that there was not common agreement in our group concerning interpretation of one of the fundamentals of the ASA Z16.1 Code.

In his concluding remarks, R. W. White, Chairman, thanked the Committee for its cooperation and said that, as Chairman, he had derived a great deal of personal satisfaction from his association with the group so dedicated to preventing injury to fellow employees.

I. R. Dohr, Consumers Power Co., assumed Chairmanship of the Committee June 1, and A. J. Naquin, New Orleans Public Service Inc., is Vice Chairman.

Mailers for Commercial Electric Cooking

A SERIES of four two-color commercial electric cooking mailers using Gaslight Era cover illustrations are available to commercial executives and sales managers of electric utility companies from EEI.

They are designed to sell the food service operator on the general advantage of electric cooking and the specific advantages of griddles and fryers, electric ovens and electric steam cooking in a language that he can understand.

Prepared under supervision of the EEI Commercial Cooking and Water Heating Committee, the folders are in two colors and illustrated with photographs of electric cookers in operation. The back page of the folder has been left blank to provide room for a local message.

The price is $3.00 per hundred for EEI member companies, with a minimum order of 100 mailers. There is a 10 per cent additional charge to non-members of EEI. Address orders to Commercial Department, Edison Electric Institute, 420 Lexington Ave., New York 17, N. Y.

New 'Underground Systems Reference Book'

(*Continued from page* 264)

information has been drawn. Technical data have been recorded in tabular and graphical form for convenient use in the solution of practical problems. The use of numerous formulas in the solution of problems has been illustrated by detailed examples.

To illustrate the national scope and thoroughness with which the entire work has been handled, two chapters — 3 and 5 — have been selected for more detailed analysis.

Chapter 3, "Bulk Power Systems," has sections covering high-pressure oil-filled cable, high-pressure gas-filled cable, medium-pressure gas-filled cable, and low-pressure oil-filled cable, each written by a leading authority.

Consolidated Edison Co. of New York, Inc., furnished the key authors for high-pressure, oil-filled cable, a Detroit Edison Co. man handled high-pressure gas-filled cable, a Potomac Electric Power Co. man handled medium-pressure gas-filled cable, and Commonwealth Edison Co. men handled low-pressure oil-filled cable.

Perhaps some may be surprised that Chapter 5, "Underground Secondary Networks," was edited by a Pittsburgh engineer rather than a New York man. This was deliberate because it was felt that the Pittsburgh type of problem was more like that which would be generally encountered than the New York situation. However, the chapter does cover special engineering features of New York City networks and this section was reviewed for authenticity by a Consolidated Edison Co. man. At the other extreme, features of the small-town network system were also covered and reviewed by engineers operating such systems. Although not extensively used in other parts of the country, the Philadelphia loop primary type of system is also covered in this chapter.

Perhaps a critical review of the publication should include the one obvious deficiency; namely, the absence of emphasis on the economics of underground distribution. This is a very controversial subject and in fairness to the editorial board, thorough treatment of the economics of underground distribution might easily require a volume equal in size to the reference book itself.

The book has been profusely illustrated with more than 900 photographs and drawings depicting the equipment and practices discussed throughout the text. It has been provided with an extensive and carefully selected bibliography listing articles which are particularly pertinent to the subjects under discussion, or which provide basic supporting data. It has been minutely indexed and cross-referenced for convenient use.

This book is a must for every engineer interested in underground power systems. In all, it is an excellent piece of work and the editorial board is to be congratulated on its efforts.

Automatic Control

(*Continued from page* 280)

tion where the curves show almost ideal operation. From the operator's standpoint, he is frequently able to set the control at 9 a. m. and leave it untouched until 9 p. m.

What are its limitations? In general the speed of response of the system is approximately proportional to the number of stations on control. When we reduce the number of stations which will participate in load changes from six to two, we reduce the system's ability to follow accurately sudden changes in load.

Increased Load Causes Error

Figures 5, 6 show a case where a rapidly increasing load during the evening peak resulted in an error which reached 18 mw. This is an exaggerated case and simply indicates a limitation to our method of using the equipment.

We are now using a feature known as the "Excess Area Requirement" to limit the "Area Requirement" to 10 mw. This feature causes all stations to respond to control when the error exceeds a set magnitude, disregarding economic loading until the system is normal. By setting this feature at 10 mw we are able to use the hydro almost exclusively for peaking and at the same time allow the steam stations to respond to control when the hydro units are unable to keep up with the load change.

Our plans for the future include the addition of a transmission loss computer when economically justified, the extension of control to new stations as the system grows and the improvement of communication channels by the use of leased telephone circuits or other means to supplement the power line carrier now used almost exclusively.

Wisconsin Utility Accountants Meet

THE annual convention of the Accounting Section, Wisconsin Utilities Association, held at Lank o' Lakes, Wis. was attended by 130 accounting department chiefs and their aides.

Speakers included C. D. McDaniel, partner, Arthur Anderson & Co., Chicago, who said: "The tools most commonly used to measure accomplishment are of budgetary and statistical nature and it is your job to keep these tools sharp and make the best possible use of them."

Nemeyer Speaks

S. Lloyd Nemeyer, president, Wisconsin Utilities Association, said: "The public must be taught to understand the excellent job that our utilities are doing in the free economy if we are to expect the public to understand and appreciate the problems that confront us."

Construction of a nuclear electric generating plant in Wisconsin was predicted by George P. Steinmetz, chairman, Public Service Commission of Wisconsin. He discussed current utility regulatory problems.

John Perkins, vice president, Continental Illinois National Bank and Trust Co., addressed the group on "Interest Rates and Inflation."

Round-Table Discussions

A day of the convention was devoted to round-table discussions of the four committees of the Section.

Officers elected are: Chairman, Gerhardt A. Schmidt, assistant secretary, Wisconsin Michigan Power Co., succeeding Juel C. Berg, assistant controller, Lake Superior District Power Co., Vice Chairman, C. C. Herrmann, vice president and treasurer, Wisconsin Power and Light Co.

EEI PUBLICATIONS AND SERVICE MATERIAL

A more detailed Publication Catalog available upon request.

(Prices include transportation in U. S. only. Please order by number shown before title. Standing Orders may be placed for a specified number of copies of reports of various committees as issued, to be shipped to one address.)

Payable in United States Currency—Postage Stamps Not Acceptable

Accounting and Statistical

	Members	Non-Members
Accounting Conference Proceedings (Bound Volume) 1957	$5.00	$7.50
Previous Years Available.		
Internal Auditing Procedure Manual.	6.00	7.00
51-23—Methods of Estimating Utility Plant Life, 1951	1.50	3.75
Accounting Development Service	$2.50 yearly	
Series of periodic bulletins issued about every 3 months—describing new methods, procedures, machines, equipment, etc., of interest to electric and gas accountants; selected by specially appointed Committee.		
Statistical		
57-2—Electric Light and Power Industry, 1956 (1957)	1.25	1.25
56-2—Electric Light and Power, Industry, 1955 (1956)	1.00	1.00
55-2—Electric Light and Power Industry, 1954 (1955)	1.00	1.00
54-2—Electric Light and Power Industry, 1953 (1954)	1.00	1.00
53-2—Electric Light and Power Industry, 1952 (1953)	1.00	1.00
52-2—Electric Light and Power Industry, 1951 (1952)	1.00	1.00
(Statistical Bulletins also available for years 1948-1951 (inclusive) each	.75	.75
Weekly, Monthly and Annual Statistics (Includes Annual Statistical Bulletin; Weekly Electrical Power Output; Monthly Electrical Research Statistics)	2.00	2.00

Engineering Committees

ACCIDENT PREVENTION—RESUSCITATION

*100-499 copies 15% discount, 500 or more copies 25% discount.

55-1—Hot Line Tool Guide	.25	.25*
54-4—Place of Safety in Selection and Training of Employees	.25	.65
51-8—"By the Grace of God," 1951	.25	.25*
P-9—Application and Care of Rubber Protective Equipment, 1948	.25	.25*
M-10—Fifteen Messages on Accident Prevention in Electric Utilities	.10	.10
L-4—Linemen Cutouts (2/45)	.10	
K-8—Pole Top Resuscitation (9/43)	.10	
(Quantity Prices on Application)		

ELECTRICAL SYSTEM AND EQUIPMENT COMMITTEE

57-4—Survey of Electric Utility System Planning Practices, 1957	1.25	3.15
57-3—Electric System Load Forecasting, 1957	.70	1.75
55-19—Substation Loading by Thermal Capability	.60	1.50
M-3—Principles of System Relaying (1945)	.60	1.50

HYDRAULIC POWER COMMITTEE

55-9—Hydraulic Turbine and Draft Tube Settings	.40	1.00
52-14—Pitting Experiences of Hydraulic Turbines	.60	1.50

JOINT REPORTS

	Members	Non-Members
57-7—Standards for Secondary Network Transformers Subway-Vault Types (Liquid-Immersed) 1st Report, EEI-NEMA, 1957	.80	.80
55-14—Standards for Distribution Transformers, Overhead Type, 6th Report, EEI-NEMA, 1956	1.20	1.20
55-8—Polyphase Motor Starting Current Rules, AEIC, EEI, NEMA, 1955	.25	.25
51-19—Joint Use of Poles in Rural Areas, EEI-Bell Systems, 1951	No charge	
51-16—Inductive Coordination Aspects of Power Factor Correction Capacitor Installations — Engineering Report No. 50 — Joint Subcommittee on Development & Research — EEI and Bell Telephone System—1951	.80	2.00
51-3—Recommended Standards for Distribution Transformers, Conventional Subway Type—1st Report, EEI-NEMA, 1951	.60	.60
R-9—Branch Circuit Overcurrent Protection for Low-Voltage Circuits of 30 Amperes or Less Used for Interior Wiring—Report of Joint Committee on Branch Circuit Protection of AEIC & EEI, 1949	1.00	1.00
R-6—Preferred Voltage Ratings for A-C Systems & Equipment, EEI-NEMA (1949). Send orders to American Standards Association	.70	.90
Q-8—Single - Phase Motor Starting Current Rules, EEI-NEMA-AEIC, 1948	.25	.25
Q-4—Guide for Specification on Indoor Metalclad Switchgear, AEIC-EEI-NEMA, 1948	.25	.25
P-1—Mutual Assistance in General Emergency Situations Affecting both Power & Telephone Service — Report of Joint Subcommittee on Cooperation in Emergencies, EEI and Bell Telephone System	No charge	
O-12—Report of Joint Engineering Committee of Association of American Railroads & EEI on Crossings of Electrical Supply Lines and Facilities of Steam and Electrified Railroads (8/46)	.50	
Quantities of 25 or more	.40	
O-11—Mutual Practices Applying to Installation and Maintenance of Equipment Used in Providing Telephone Service by Power Line Carrier in Rural Areas (For Field Trial)—Report of Joint Committee on Plant Coordination of EEI and Bell Telephone System	No charge	
M-12—Joint Pole Practices for Supply and Communication Circuits—EEI-Bell Telephone (1945)	.50	1.25
M-9 — New Developments in Office Machines — Joint AGA-EEI Customer Accounting Committee Report	.50	.50
M-5—Principles and Practices for Inductive Coordination, Allocation of Costs and Joint Use of Poles—EEI-Bell Telephone (1945)	No charge	
L-5—Interim Report of The American Research Committee on Grounding (1/44)	.10	
K-1—Volume 5 of Engineering Reports Nos. 39 to 49 of Joint Subcommittee on Development and Research (1/43)	5.00	10.00

METER & SERVICE COMMITTEE

56-7—Recommended Safety Practices for Electrical Metermen, 1956	.25	.25
100-499 copies 15% discount		
500 or more copies 25% discount		

PRIME MOVERS COMMITTEE

	Members	Non-Members
55-22—Boilers & Combustion, 1955	.75	1.90
55-21—Instruments and Controls Practices for Recent Single Boiler Turbine Reheat Installations	.80	2.00
54-17—Blowing Out Main Turbine Steam Lines before Initial Operation, 1954	.40	1.00
54-15 Turbine Operating and Outage Data Report, 1953 (1954)	.40	1.00
54-6—Turbine Operating and Outage Data Report, 1952 (1954)	.40	1.00
53-10—Turbine Operating and Outage Data for 1951, 1953	.40	1.00
52-13—Metallurgy and Piping Report, 1952	.80	2.00
52-5—Turbines, Condensers and Auxiliaries, Feed-water Heaters, Evaporators, and Deaerators, 1950 (1952)	1.40	3.50
51-9—Power Station Chemistry, 1951.	.50	1.25
51-5—Turbines, Condensers & Auxiliaries, Feedwater Heaters, Evaporators & Deaerators, 1949 (1951)	1.20	3.00
51-1—Gas Turbines, 1951	.20	.50
50-13—Deposits on Gas Side of Steam Generating Units, 1951	.30	.75
50-10—Metallurgy and Piping Report, 1950	.90	2.25
50-1—Turbine & Condensers and Associated Equipment, 1948 (1950)	1.00	2.50
R-13—Turbine and Boiler Overhaul Practice (1949)	.50	1.25
R-8—Boiler Auxiliaries, 1948	.30	.75
R-7—Metallurgy and Piping, 1948	.60	1.50
R-3—Turbines, Condensers & Auxiliaries, Feedwater Heaters & Evaporators, 1946-47 (1949)	1.40	3.50
R-1—Boilers & Combustion, 1948 (1949)	1.00	2.50
P-10—Boiler Auxiliaries, 1946-1947	.70	1.75
P-8—Turbines, Condensers, and Their Auxiliaries, 1945-1946	1.00	2.50
P-4—Metallurgy and Piping, 1947 (9/47)	.60	1.50
O-13—Boilers and Combustion, 1946	1.00	2.50
M-6—Boiler Auxiliaries, 1944-45	.70	1.75

TRANSMISSION AND DISTRIBUTION COMMITTEE

57-5—Guide for Loading Network Protectors, 1957	.25	.25
56-8—Cable Operation, 1954 (1956)	.70	1.75
55-10—Cable Operation, 1953 (1955)	.70	1.75
54-8—Cable Operation, 1952 (1954)	.70	1.75
54-5—A-C Network Operations, 1950-52	.75	1.90
53-16—Cable Operation Report, 1951	.70	1.75
52-10—Cable Operation Report, 1950 (1952)	.70	1.75
52-6—Cable Operation Report, 1949 (1952)	.70	1.75
51-10—Cable Operation Report, 1948 (1951)	.70	1.75
51-6—A-C Network Operations, 1947-1949 (1951)	.65	1.65
50-3—Cable Operation, 1947 (1950)	.75	1.75
Q-12—A-C Network Operations, 1944-1946 (1949)	.60	1.50
Q-10—Cable Operation Report, 1946	.75	1.75
Q-1—Cable Operation Report, 1945	.75	1.75
K-10—Line Clearing Manual, 1944	1-9 copies	35c.

SUGGESTIONS FOR SPECIFICATIONS

10 to 49 copies, 25% discount
50 or more copies, 50% discount

AP-1—Specifications for Electrical Workers Insulating Safety Headgear, 1954	.25	.25
AP-2—Specifications for Electrical Workers' Insulating Safety Headgear, 1957	1-10 copies	.35
	11-49 copies	.30
	50 or over	.25
MS-1—Suggestions for Specifications for Standard Dial Constants for Alternating Current Watthour Meters (8/40)	.10	.10
MSJ-3—Standards for Metering Current Transformers for Primary Circuits, AEIC-EEI-NEMA, 1951	.10	.10
MSJ-4—Standards for Indicating Demand Registers, AEIC-EEI-NEMA, 1952	.50	.50
MS-5—Specifications for Indicating Thermal Watt Demand Meters, 1946	.10	.10
MS-6—Specifications for Marking and Arrangement of Terminals for Phase-Shifting Devices Used in Metering, 1946	.10	.10
MSJ-7—Standards for Watthour Meter Sockets, AEIC-EEI-NEMA, 1950	1.25	1.25
MSJ-8—Standards for Test Blocks and Cabinets for Installation of Self-Contained "A" Base Watthour, Meters, AEIC-EEI-NEMA, 1951	.50	.50
MS-9—Specifications for Test Switches for Transformer Rated Meters, 1954	.25	.25
TD-1—Specifications for Steel Bolts and Nuts, 1949	.10	.10
TD-2—Specifications for Strand Eye Anchor Rods 1956	.10	.10
TD-3—Specifications for Lag Screws, 1950	.10	.10
TD-4—Suggestions for Specifications for Eye Bolts	.10	.10
TD-5—Specifications for Eyenuts and Eyelets, 1955	.15	.15
TD-6—Specifications for Steel Crossarm Braces (1957)	.15	.15
TD-7—Specifications for Spool Type Secondary Racks 1948	.10	.10
TD-8—Suggestions for Specifications for Straight Tinned Copper Connectors 1940	.10	.10
TD-9—Specifications for Single Tube Seamless Copper Splicing Sleeves 1942	.10	.10
TD-10—Specifications for Rolled Steel Washers, 1953	.10	.10
TD-11—Specifications for Guy Hooks and Guy Strain Plates, 1951	.10	.10
TD-12—Specifications for Pole Guards, 1946	.10	.10
TD-14—Specifications for Moulding Staples, 1954	.15	.15
TD-15—Specifications for Pole and Lower Steps, 1946	.10	.10
TD-16—Line Hardware Materials Inspection Procedure, 1950	.10	.10
TD-17—Specifications for Bolt Type Steel Insulator Pins with One Inch Diameter Lead Threads, 1947	.10	.10
TDJ-19—Standard Mounting Bracket for Distribution Cutouts and Distribution Lightning Arresters, 1949	.10	.10

	Members	Non-Members
TD-21—Specifications for Steel Clevises for Guy Strain Insulators, 1952	.10	.10
TD-22—Specifications for Pole Top Pins, 1951	10.	.10
TD-23—Specifications for Guy Clamps, 1951	.10	.10
TD-51—Specifications for Low and Medium Voltage Pin Type Lime-Glass Insulators 1942	.25	.25
TDJ-52—Standards for Wet-Process Porcelain Insulators — Suspension Type, EEI-NEMA, 1952	.25	.25
TDJ-53—Standards for Wet-Process Porcelain Insulators — Spool Type, EEI-NEMA, 1952	.25	.25
TDJ-54—Standards for Wet-Process Porcelain Insulators — Strain Type, EEI-NEMA, 1952	.25	.25
TDJ-55—Standards for Wet-Process Porcelain Insulators—Low-and-Medium Voltage Pin Type, EEI-NEMA, 1952	.25	.25
TDJ-56—Standards for Wet-Process Porcelain Insulators — High-Voltage Pin Type, EEI-NEMA, 1952	.25	.25
TDJ-57—Standards for Wet-Process Porcelain Insulators—High-Voltage Line-Post Type, EEI-NEMA, 1952	.25	.25
TDJ-58—Standards for Wet-Process Porcelain Insulators (Apparatus-Cap & Pin Type), 1956	.30	.30
TDJ-59—Standards for Wet-Process Porcelain Insulators (Apparatus-Post Type), 1956	.30	.30
TD-71—Suggestions for Specifications for Insulator and Pin Threads and Gauges, 1937	.10	.10
TD-72—Tentative Specifications for Line Connectors and Splices 1949	.10	.10
TD-90—Specifications for Douglas Fir Crossarm Treated or Untreated, 1949	.10	.10
TD-91—Specifications for Dense Southern Pine Crossarms, Preservative Treated, 1957	.30	.30
TD-100—Specifications for Full-Length Non-Pressure Preservative Treatments of Poles (Hot and Cold Submersion Processes), 1952	.25	.25
TDJ-110—Standards for Distribution Fuse Links, EEI-NEMA, 1951	.15	.15
TDJ-131 — Standards for Filament Lamps Used in Street and Highway Lighting, EEI-NEMA, 1951	.10	.10
TDJ-132—Standards for Photometric Tests for Luminaries Used in Street and Highway Lighting, EEI-NEMA, 1951	.10	.10
TDJ-133—Standards for Voltage Classification of Luminaires Used in Street and Highway Lighting, EEI-NEMA, 1951	.10	.10
TDJ-134 — Standards for Pendant Luminaire Mounting Used in Street and Highway Lighting, EEI-NEMA, 1951	.10	.10
TDJ-135—Standards for Street Lighting Poles Used in Street and Highway Lighting, EEI-NEMA, 1953	.30	.30
TDJ-136—Standards for Series Sockets and Series-Sockets Receptacles Used in Street and Highway Lighting, EEI-NEMA, 1951	.10	.10
TDJ-137—Standards for Steel Luminaire Supports for Wood Poles Used in Street & Highway Lighting, EEI-NEMA, 1956	.25	.25
TDJ-138—Standards for Film Cutouts Used in Street & Highway Lighting, EEI-NEMA, 1956	.15	.15
TDJ-139—Standards for Materials, Finishes and Performance Tests for Equipment, EEI-NEMA, 1953	.20	.20
TDJ-140—Standards for Metal Head and Reflector Interchangeability, EEI-NEMA, 1953	.10	.10
TDJ-141—Standards for Insulator Head and Reflector Interchangeability Used in Street & Highway Lighting, EEI-NEMA, 1956	.25	.25
TDJ-142—Standards for Open Reflector Mountings Used in Street and Highway Lighting, 1953	.20	.20
TD-160—Specifications for Solder Sweated Split Tinned Copper Connectors, 1955	.25	.25

Commercial Division Reports and Manuals

***Quantity Prices Upon Request**
† 10% Additional for Non-Members

Farm Electrification	Members	Non-Members
"Farm Better Electrically" Program Materials—Information Supplied on Request		
56-15—Farm Electrification Research, 3rd Edition, 1956	1.25	1.25*
56-14—Electrical Projects for Farm Youths, 1956	1.25	2.00
56-13—Agricultural Development Programs Pay	.25	.25*
Farm Electrification Lesson Plans for Vocational Agriculture Teachers, 1955	.50	.50
53-19—Electrical Projects for Farm Youths, 1953	1.50	2.50
53-18—Ideas for Farm Displays, 1953	1.00	2.50
53-15—What Electric Companies Are Doing in Farm Betterment Programs, 1953	1.00	1.00
53-14—Practical Farm Wiring Demonstrations, 1953	1 to 49 copies .50 ea *	
50-8—Farm Electrical Equipment Handbook, 1951	2.25	2.25*
Farm Lighting Slide Kit—20 black & white 2 x 2 slides and scripts	Single kits $5.00 *†	
Farm Electrification Speakers' Slide Kit on Electrical Safety & Maintenance on the Farm—57 Kodachrome Slides and Speakers' Scripts	Single kits $12.00 *†	
"Light for Seeing on the Farm" (E-400) well-illustrated 14 pg booklet emphasizing importance of lighting (min order 100)	100-199 copies .05 ea *†	
"Plan for Action"—suggestions for conducting farm lighting promotion activity and source list of lighting promotional materials	.25†	
Farm Electrification Manual, includes and binder—prices available upon request.	17 Sections	
General		
56-12—Heat Pump Data Sheets on Residential and Commercial Installations	2.00	3.00
56-3—Listing of Manufacturers of Principal Types Electric Space Heating Equipment, 1956	.25	.50
55-6—Current Status of Commercial Heat Pump Promotion by Electric Utilities	.25	.50
53-5—Study to Determine the Load and Revenue Potential of Apparel Stores, 1953	.50	.50
52-11—Application of Electrical Equipment in Commercial Establishments, Revised, 1955	1.00	2.50*
51-15—Study to Determine Load and Revenue Potential of American Food Markets, 1951	.25	.25
P-6—The Heat Pump, 1947	.25	.25
Lighting		
56-12—Heat Pump Data Sheets on Res. & Coml. Installations, 1956	2.00	3.00
56-11—Catalogue of Lighting Demonstration and Exhibit Materials	1.00	1.50
55-4—Summary of Preliminary Questionnaire on Mercury Fluorescent Lamps Used for Street and Highway Lighting	.50	.50
54-14—Commercial Lighting Sales Organization Manual, 1954	1.00	1.50
Power		
I-1—Power Sales Manual, Volumes I and II Includes two binders and tabs—Prices Available upon request.		
Water Heating		
55-12—Tips on Elec Water Heater Installations, 1955 (min order 100)	Single copies .15 ea *†	
51-12—Study to Determine Load and Revenue of Water Heater Market, 1951	.25	.25
Wiring		
56-4—Commercial Wiring Modernization, 1956	1.00	1.00*
55-13—Tips on Room Air Conditioners and Attic Fan Installation, 1955 (min order 100)	Single copies .20 ea *†	
55-7—Farmstead Wiring Handbook, 1955	Single copies .50 ea *	
54-13—Residential Wiring Handbook, 1954	Single copies .25 ea *	

NATIONAL PROGRAMS

Better Light Better Sight Bureau

"Teaching About Light and Sight"—Classroom program for teaching about light and sight in 5th and 6th grades. Price list on request.

"Living With Light" — Classroom program for teaching about light and sight in Junior High School Science classes. Price list on request.

"Lighting for Better Living"—Program for teaching about light and sight in Home Economics classes, 4-H Clubs and Extension Groups. Price list on request.

"Working with Light"—program of supplementary study materials for use in Industrial Arts and Vocational Education classes, adult education and 4-H groups. Price list upon request.

"Light Is What You Make It"—A sound movie in Technicolor produced by Walt Disney Productions, 16 mm, 10 min. $100 per print.

"Light, An Aid to Sight" (B-562) 8-pg, 2-color, pocket-size folder on home lighting for consumer distribution—$2.00 per 100, $15 per 1000 FOB N Y*

"How to Make Homework Lighter" (B-563) 8-pg, 2-color booklet on lighting for home study; for consumer distribution—$4.00 per 100, $35 per 1000 FOB N Y*

"Eyes, our Windows to the World" (B-564) 24-pg booklet on lighting and science of seeing—$6.75 per 100, $60 per 1000 FOB N Y*

*Minimum order 100

Sales Training Program

Appliance Sales Training Course—6 Films and Records	250.00
Set of 6 Salesmen's Manuals for above course	4.50
Industrial Sales Training Handbook	18.50

HOUSEPOWER Program

HOUSEPOWER Forum on Residential Wiring Modernization (Sales Training)	$250.00
Set of 7 booklets and binders for above	1.75
Visual Presentation for Wiring Salesmen	3.50

Promotional Materials—write for latest information.

OTHER PROMOTIONAL MATERIALS

A detailed Publications Catalog is available upon request to the Commercial Department of the Institute. This Catalog contains information on many Commercial materials, including—

Commercial Cooking, Water Heating and Planned Lighting, Industrial and Residential Promotional Materials, Sales Personnel and Training Materials.

Samples will be supplied on request.

Miscellaneous Publications

***Quantity prices upon request.**

	Members	Non-Members
57-6—21st Semi-Annual Electric Power Survey, 1957	1.00	1.00
56-9—Glossary of Electrical Terms	.50	.50*
56-6—I Want to Know About the Electric Industry, 1957 Edition	Single copies gratis Quantity prices upon request	
56-5—Pocketbook of Electric Industry Statistics, 1956	.35	.35*
55-17—Effect of An Atomic Blast on Electric Power Facilities 1 to 10 copies	.75	.75*
55-16—Underground Systems Reference Book, 1957	11.50	12.50*
54-3—Protection of Industrial Land, Method and Results, Report of Ind. Development Subcommittee, Area Development Committee, 1954	.40	1.00
53-6—Area Development Suggestions, #3, 1953	.30	.75
53-4—Bibliography of Heat Pump, Through 1951	1.00	1.00
52-17—Area Development Suggestions, Number 2	.25	.40
52-12—Area Development Suggestions #1, 1952	.40	1.00
51-18—Specifications for Impregnated Paper Insulated Cable, High Pressure Pipe Type—1st Edition, AEIC, 1951	Single Copy 1.00*	
51-4—Specifications for Impregnated Paper Insulated Lead-Covered Cable Oil-Filled Type, AEIC, 1951	Single Copy 1.00*	
50-7—Specifications for Alternating-Current Power Circuit Breakers (2nd Edition), AEIC, 1950	.60	.60
R-17—Specifications for Impregnated Paper-Insulated, Lead-Covered Cable, "Solid" Type (8th Edition) AEIC, 1949	1.00	1.00
R-12—Electrical Meterman's Handbook —6th Edition—1950	Single copy 3.30	4.90*
Q-11—Suggested Field Test Procedure for Determination of Coefficient of Performance Factor of an Electric Heat Pump While Operating on Heating Cycle, 1948	.25	.25
Q-5—Specifications for Impregnated Paper-Insulated, Lead-Covered Cable, "Low Pressure, Gas-Filled" Type—AEIC, 1948	Single copies 1.00 10 or more copies .85	
Rate Book for 1955	20.00	30.00

Periodicals

Better Light Better Sight News (6 issues yearly)	1.00	1.00
Edison Electric Institute Bulletin (Monthly)	2.00	2.00
Farm Electrification (a bi-monthly publication) Up to 5 copies	Free To Mem.	
Over 5 copies per year	1.00	1.50
	Quantity prices upon request.	
Home Service Exchange Yearly subscription	1.00	1.50
	One free copy to members upon request.	

Personals

Harland C. Forbes, president of Consolidated Edison Co. of New York, Inc., has been elected chairman and **Charles E. Eble,** vice president in charge of accounting, auditing and tax operations, was elected president of the company, succeeding Mr. Forbes. Mr. Forbes succeeds **H. R. Searing,** who died in June.

HARLAND C. FORBES

After receiving degrees in science from the University of New Hampshire and Massachusetts Institute of Technology, Mr. Forbes joined Con Edison in 1924 as assistant to the chief electrical engineer. As system engineer and later as vice president, Mr. Forbes was chiefly responsible for the coordination of the company's gas, electric and steam engineering and for long-range planning. He was primarily responsible for the master plan upon which the company's post-war expansion was based. He was elected executive vice president in 1949 and became president in 1955. He is Chairman of the company's Financial Advisory Committee and has served as member of many committees for various electrical associations. Mr. Forbes is a trustee of the New York Savings Bank; a member of the Engineers Club, the Manhattan Club and the Society of Gas Lighting, and a Fellow of the American Institute of Electrical Engineers.

Mr. Eble, who began his career with Con Edison as an office boy in 1916, rose through the ranks to become controller in 1946 and vice president in 1953. He joined Consolidated Gas, a Con Edison predecessor, 41 years ago. He soon was promoted from office boy to the accounting department. He studied business administration and accounting at Alexander Hamilton Institute and progressed through positions of increasing responsibility. He was appointed assistant controller of Con Edison in 1936 at the time of the consolidation of many of the local gas and electric companies. Mr. Eble is a director of Consolidated Telegraph and Electrical Subway Co., a board member of the National Industrial Conference Board and of the Advisory Board of Jefferson Custodian Fund, Inc. His interest in utility employee affairs has been reflected in membership on governing boards of the Consolidated Edison Employees Mutual Aid Society, Inc., and the Green Mountain Lakes Foundation, Inc., an employee welfare organization.

CHARLES E. EBLE

Con Edison also announced three other executive promotions. **James F. Fairman, Earl L. Griffith and L. A. Scofield,** vice presidents of the company, were promoted to senior vice presidents.

D. E. Stultz, executive vice president of Potomac Edison Co., was recently elected president of the utility, succeeding **R. Paul Smith** who has retired. As chief executive of Potomac Ed, he also will be president of Northern Virginia Power Co., the Potomac Light & Power Co. and the South Penn Power Co. In the utility business for 38 years, Mr. Stultz has had experience in nearly all phases of utility operation. He started in the electrical department of Hagerstown & Frederick Railway Co., a Potomac Ed predecessor, in 1919. In 1924, he became district manager of Northern Virginia Power. Eight years later he was elevated to commercial manager of Potomac Ed and in 1937 elected commercial vice president. Mr. Smith had been president for the past 25 years and was a 50-year veteran with the system.

D. E. STULTZ

Mr. Stultz will continue as a member of the board of directors of Potomac Edison Co.

Carl C. Ernst, vice president and general manager of California Electric Power Co., has been elected president of the company to succeed **Albert Cage** who is retiring. Other executive changes at the company include: **Fred Oldendorf,** vice president and assistant general manager, to general manager; **Robert Neuman,** district manager at San Bernardino, to vice president in charge of districts.

Mr. Ernst has been vice presi-

dent of the company since 1944 and general manager since 1946. He has been with the company 37 years.

With the utility 43 years, Mr. Cage was vice president of California Edison from 1943 to 1946, when he was elected president of the utility.

CARL C. ERNST

L. H. Jaeger, secretary and treasurer of The Southern Co., recently was elected vice president and treasurer of the company. **D. B. Peck,** assistant secretary and assistant treasurer, was elected secretary. In other organizational changes, **John J. McDonough,** president of the Georgia Power Co., was elected a director of Southern, succeeding **Percy H. Clark,** who has resigned; **J. H. McGuire,** assistant to the Southern president, was elected vice president; **George B. Campbell,** senior engineer of Southern Services, Inc., was advanced to assistant secretary and assistant treasurer. Mr. Jaeger joined Southeastern Power and Light Co. in 1924 and subsequently became assistant comptroller of Commonwealth and Southern Corp. of New York, a predecessor of The Southern Co. He was elected secretary and treasurer in 1955.

Francis A. Keane, assistant to the president of Public Service Electric and Gas Co., has been elected vice president and member of the board of the company. **Thomas N. McCarter** has resigned as a board member because of ill health. Mr. Keane has been with Public Service since 1923 and has held various positions in the statistical and comptroller's departments.

The Emerging Role of Public Relations

(*Continued from page* 261)

their opinion; thus the survey itself is likely to prove to be good public relations. Don't overlook your employees, by any means. Opinion research has repeatedly shown that employees are the most important single source of public information about a company. Their attitudes will undoubtedly be reflected in the attitude of the public.

From the evidence we have from surveys conducted in the past it is quite likely that you will find that the public is not very well informed about your business. In conjunction with this, you may discover positive misinformation about your business, not only in the minds of the public, but among many of your employees as well. Unless you have been doing a particularly fine public relations job in the past, you will further discover that both your employees and the public are opposed to some of your policies.

As a fourth step you should develop the program itself. During this development keep in mind that your plan of action should assure that your efforts are directed toward achieving your specific goals. List the various means, in detail, by which you hope to accomplish your goals.

It is a good idea to have a manual printed up containing the policies and practices that are to be put into effect, as well as the means of communication to be used. Such a manual will assure that everyone connected with the program will have the material readily available as a reference source.

Using the results of your opinion surveys, make sure your plan of action is based on doing more of those things which the public appears to like, and doing fewer things your employees and the public do not like. Any practices opposed by the public or your employees which cannot be discontinued should be fully explained by means of appropriate avenues of communication.

Don't make the common mistake of entrusting your program to inexperienced personnel. As your fifth step, secure and train the personnel who will be responsible for carrying out your public relations activities. Of course the supervisory personnel of this group will have taken a major part in the development of the first four steps. In order to do an effective job, the individual in charge of the public relations activities should be equal in rank to any other officer in the company below the president.

The sixth step will entail a periodic review of public attitude. This will provide you with some knowledge of the effectiveness of your program and will keep you abreast of any new trends in public opinion.

Here are a few basic public relations objectives for any power company. In addition to these, for any given company there will likely be special or local objectives depending on the situation. Basically, the goal of a public relations program should be to achieve a situation in which the people of the community:

1. Thought the service was good, and every effort was being made to improve it.
2. Felt that rates were fair and reasonable; knew that efforts were being made to keep them as low as possible.
3. Liked the company's employees.
4. Thought the company a fine place in which to work.
5. Preferred service from the company rather than service from a government power project.
6. Understood and sympathized with the unusual problems affecting utilities.
7. Were confident that the utility could be relied on to supply all future power needs.
8. Believed the utility made important contributions to the economic, civic and cultural growth of the community.

To achieve that kind of public support is not an easy job, but however difficult it may be, it's worth it. To succeed, the company must provide more than adequate service, and at reasonable rates. It must employ courteous, well-trained personnel who are treated fairly and with consideration. The company must jump at every opportunity to take part in civic affairs as well as contribute to the community's development. Employees should be encouraged to take part in community life. The company must plan and build for the future. Finally, the public must be told the company is doing all these things.

First, you must live right, and then let the public know that you do. When you do these two things, your public relations will be good.

1957

first
ffec-
e of
ould
ficer
lent.
odic
will
e of
and
new

rela-
com-
any
be
ding
goal
ould
the

good,
made

and
forts
them

yees.
fine

com-
from
t.
hized
af-

tility
y all

im-
eco-
owth

sup-
vever
To
ovide
nd at
mploy
who
dera-
ıp at
rt in
te to
Em-
take
mpany
uture.
d the
ıgs.
then
When
public

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

OFFICERS

D. S. KENNEDY, *President* ..... Oklahoma Gas and Electric Co., Oklahoma City, Okla.
J. W. MCAFEE, *Vice President* ..... Union Electric Co., St. Louis, Mo.
EDWIN VENNARD, *Vice President and Managing Director* ..... 420 Lexington Ave., New York, N. Y.
H. S. SUTTON, *Treasurer* ..... Consolidated Edison Co. of New York, Inc., New York, N. Y.
A. B. MORGAN, *Secretary and Assistant Managing Director* ..... 420 Lexington Ave., New York, N. Y.

BOARD OF DIRECTORS

(*Terms expiring 1958*)

J. L. BATES ..... Central Power and Light Co., Corpus Christi, Texas
A. M. BEEBEE ..... Rochester Gas and Electric Corp., Rochester, N. Y.
F. D. CAMPBELL ..... Cambridge Electric Light Co., Cambridge, Mass.
C. B. DELAFIELD ..... Consolidated Edison Co. of New York, Inc., New York, N. Y.
R. ROY DUNN ..... Potomac Electric Power Co., Washington, D. C.
R. H. GERDES ..... Pacific Gas and Electric Co., San Francisco, Calif.
N. B. GUSSETT ..... Iowa Power and Light Co., Des Moines, Iowa
E. L. LINDSETH ..... The Cleveland Electric Illuminating Co., Cleveland, Ohio
D. C. LUCE ..... Public Service Electric and Gas Co., Newark, N. J.
M. S. LUTHRINGER ..... Central Illinois Public Service Co., Springfield, Ill.
C. E. OAKES ..... Pennsylvania Power & Light Co., Allentown, Pa.
H. T. PRITCHARD ..... Indianapolis Power & Light Co., Indianapolis, Ind.
K. M. ROBINSON ..... The Washington Water Power Co., Spokane, Wash.
L. M. SMITH ..... Alabama Power Co., Birmingham, Ala.
HAROLD TURNER ..... American Gas and Electric Service Corp., New York, N. Y.

(*Terms expiring 1959*)

H. J. CADWELL ..... Western Massachusetts Electric Co., Greenfield, Mass.
STUART COOPER ..... Delaware Power & Light Co., Wilmington, Del.
CARL J. FORSBERG ..... Wisconsin Power and Light Co., Madison, Wis.
ALLEN S. KING ..... Northern States Power Co., Minneapolis, Minn.
C. E. KOHLHEPP ..... Jersey Central Power & Light Co., Asbury Park, N. J.
C. R. LANDRIGAN ..... The Detroit Edison Co., Detroit, Mich.
J. E. LOISEAU ..... Public Service Co. of Colorado, Denver, Colo.
EARLE J. MACHOLD ..... Niagara Mohawk Power Corp., Syracuse, N. Y.
D. C. MCKEE ..... The Empire District Electric Co., Joplin, Mo.
P. H. POWERS ..... West Penn Power Co., Greensburg, Pa.
R. G. RINCLIFFE ..... Philadelphia Electric Co., Philadelphia, Pa.
R. E. RITCHIE ..... Arkansas Power & Light Co., Little Rock, Ark.
W. H. SAMMIS ..... Ohio Edison Co., Akron, Ohio
J. R. WELSH ..... Southwestern Gas and Electric Co., Shreveport, La.
ERWIN H. WILL ..... Virginia Electric and Power Co., Richmond, Va.

(*Terms expiring 1960*)

W. C. BECKJORD ..... The Cincinnati Gas & Electric Co., Cincinnati, Ohio
W. C. BELL ..... The United Illuminating Co., New Haven, Conn.
N. A. COCKE ..... Duke Power Co., Charlotte, N. C.
J. F. DAVENPORT ..... Southern California Edison Co., Los Angeles, Calif.
T. W. DELZELL ..... Portland General Electric Co., Portland, Ore.
G. S. DINWIDDIE ..... New Orleans Public Service Inc., New Orleans, La.
WILLIS GALE ..... Commonwealth Edison Co., Chicago, Ill.
M. L. KAPP ..... Interstate Power Co., Dubuque, Iowa
W. T. LUCKING ..... Arizona Public Service Co., Phoenix, Ariz.
W. W. LYNCH ..... Texas Power & Light Co., Dallas, Texas
L. C. MCCLURKIN ..... Savannah Electric and Power Co., Savannah, Ga.
J. J. MCDONOUGH ..... Georgia Power Co., Atlanta, Ga.
A. R. SCHILLER ..... Public Service Co. of New Hampshire, Manchester, N. H.
G. W. VAN DERZEE ..... Wisconsin Electric Power Co., Milwaukee, Wis.
J. THEODORE WOLFE ..... Baltimore Gas and Electric Co., Baltimore, Md.

Executive Committee

C. B. Delafield, R. R. Dunn, A. S. King, E. L. Lindseth, C. E. Oakes, R. G. Rincliffe
K. M. Robinson, W. H. Sammis, G. W. Van Derzee

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

ADVISORY COMMITTEE 1957-1958

D. C. BARNES.....Virginia Electric and Power Co.
A. D. BARNEY.....The Hartford Electric Light Co.
J. B. BLACK.....Pacific Gas and Electric Co.
HARLLEE BRANCH, JR.....The Southern Co.
W. L. CISLER.....The Detroit Edison Co.
C. P. CRANE.....Baltimore Gas and Electric Co.
T. G. DIGNAN.....Boston Edison Co.
EDGAR H. DIXON.....Middle South Utilities, Inc.
PHILIP A. FLEGER.....Duquesne Light Co.
GEORGE M. GADSBY.....Utah Power & Light Co.
D. E. KARN.....Consumers Power Co.
GEORGE L. MACGREGOR.....Texas Utilities Co.
LYLE MCDONALD....Public Service Electric and Gas Co.
PAUL B. MCKEE.....Pacific Power & Light Co.
I. L. MOORE.....New England Electric System
W. C. MULLENDORE.....Southern California Edison Co.
GROVER C. NEFF.....Wisconsin Power and Light Co.
J. S. OSBORNE.....Central & South West Corp.
PHILIP SPORN.....American Gas and Electric Co.
L. V. SUTTON.....Carolina Power & Light Co.
FRANK M. TAIT.....The Dayton Power and Light Co.
J. B. THOMAS.....Texas Electric Service Co.
E. S. THOMPSON....The West Penn Electric Co. (Inc.)
ALLEN VAN WYCK.....Illinois Power Co.

CHAIRMEN OF EDISON ELECTRIC INSTITUTE COMMITTEES (1957-1958)

ACCOUNTING

Accounting Division Executive, J. D. ELLIOTT.....The Detroit Edison Co., Detroit, Mich.
Coordinator of Customer Activities Group, C. J. BERNER.....Wisconsin Electric Power Co., Milwaukee, Wis.
Customer Accounting, M. F. YOUNG.....The Connecticut Light & Power Co., Hartford, Conn.
Customer Collections, J. E. HEVRON.....New Orleans Public Service Inc., New Orleans, La.
Customer Relations, H. R. POTTS.....Columbus and Southern Ohio Electric Co., Columbus, Ohio
Coordinator of General Activities Group, P. R. LAWSON.....Pennsylvania Electric Co., Johnstown, Pa.
Depreciation Accounting, O. E. SMITH.....Baltimore Gas and Electric Co., Baltimore, Md.
General Accounting, G. F. JONES.....Potomac Electric Power Co. Washington, D. C.
Internal Auditing, R. B. TRITTON.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Plant Accounting and Property Records, G. A. BROWNMILLER.....The Connecticut Light & Power Co., Hartford, Conn.
Taxation Accounting, C. E. YORK.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
Coordinator of Special Activities Group, C. T. DWIGHT.....The Hartford Electric Light Co., Hartford, Conn.
Accounting Developments Service, A. H. KERN.....Alabama Power Co., Birmingham, Ala.
Accounting Employee Relations, J. J. LEARY.....Boston Edison Co., Boston, Mass.
Application of Accounting Principles, V. A. KOS.....Commonwealth Edison Co., Chicago, Ill.
Electronic Accounting Machine Developments, R. W. BRITT.....Wisconsin Electric Power Co., Milwaukee, Wis.
Uniform System of Accounts, R. G. SCHNEIDER.....Virginia Electric and Power Co., Richmond, Va.

COMMERCIAL

Commercial Division Executive, T. O. MCQUISTON.....Metropolitan Edison Co., Reading, Pa.
Commercial Sales Group, R. I. BULL.....Ohio Power Co., Canton, Ohio
Farm Group, M. O. WHITHED.....Atlantic City Electric Co., Atlantic City, N. J.
Industrial Power & Heating Group, F. E. WIATT.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
Residential Group, ROBERT L. COE.....Union Electric Co., St. Louis, Mo.
Special Services Group, B. L. PALM.....Central Illinois Public Service Co., Springfield, Ill.

ENGINEERING

Engineering & Operating Division Executive, C. W. FRANKLIN....Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
Electrical System & Equipment, H. E. DEARDORFF.....The Dayton Power and Light Co., Dayton, Ohio
Hydraulic Power, E. S. HARRISON.....Georgia Power Co., Atlanta, Ga.
Meter & Service, FLOYD SALMON.....Central Power and Light Co., Corpus Christi, Texas
Prime Movers, V. L. STONE.....Commonwealth Edison Co., Chicago, Ill.
Transmission & Distribution, W. M. PENNEY.....Union Electric Co., St. Louis, Mo.

GENERAL

General Division Executive, J. W. MCAFEE.....Union Electric Co., St. Louis, Mo.
Accident Prevention, I. R. DOHR.....Consumers Power Co., Jackson, Mich.
Area Development, S. F. MCGOWAN.....Northern States Power Co., Minneapolis, Minn.
Atomic Power, E. L. LINDSETH.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Awards, M. C. ALBRITTAIN.....Baltimore Gas and Electric Co., Baltimore, Md.
Electric Power Survey, ARTHUR S. GRISWOLD.....The Detroit Edison Co., Detroit, Mich.
Financing & Investor Relations, PAUL HALLINGBY, JR. .....Middle South Utilities, Inc., New York, N. Y.
Industrial Relations, E. J. BRILL.....Pennsylvania Power & Light Co., Allentown, Pa.
Insurance, D. E. WILLIAMS.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Legal, J. M. KEEGAN.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Membership, E. S. THOMPSON.....The West Penn Electric Co. (Inc.), New York, N. Y.
Purchasing and Stores, T. S. DUNSTAN.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Rate Research, L. W. FRANK.....Western Massachusetts Electric Co., Springfield, Mass.
Regulation, C. E. KOHLHEPP.....New Jersey Power & Light Co., Denville, N. J.
Research Projects, E. H. SNYDER.....Public Service Electric and Gas Co., Newark, N. J.
Statistical, A. E. BUSH.....The Detroit Edison Co., Detroit, Mich.
Tax Policy, C. B. MCMANUS.....The Southern Co., Atlanta, Ga.
Technical Assistance for Overseas Visitors, HARVEY BUMGARDNER.....The Detroit Edison Co., Detroit, Mich.
Transportation, R. E. HAMEL.....The Cleveland Electric Illuminating Co., Cleveland, Ohio

Co.
Co.
stem
Co.
Co.
Corp.
Co.
Co.
Co.
Co.
nc.)
Co.

Mich.
Wis.
Conn.
La.
Ohio
Pa.
Md.
D. C.
Ohio
onn.
Ohio
onn.
Ala.
Mass.
Ill.
Wis.
Va.

Pa.
Ohio
N. J.
Ohio
Mo.
Ill.

. Y.
Ohio
Ga.
Texas
Ill.
Mo.

Mo.
Mich.
Minn.
Ohio
Md.
Mich.
. Y.
Pa.
Ohio
. Y.
. Y.
. Y.
Mass.
N. J.
. J.
Mich.
Ga.
Mich.
Ohio